DEPARTMENT OF COMMERCE AND LABOR
BUREAU OF THE CENSUS
E. DANA DURAND, DIRECTOR

FOREST PRODUCTS OF THE UNITED STATES
1909

COMPILED IN COOPERATION
WITH THE DEPARTMENT OF AGRICULTURE : FOREST SERVICE,
HENRY S. GRAVES, FORESTER

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The annual Federal report on the statistics of forest products is compiled through the cooperation of the Bureau of the Census in the Department of Commerce and Labor and the Forest Service in the Department of Agriculture. The work is conducted under the direct supervision of a committee of four, consisting of W. M. Steuart, chief statistician for manufactures, and J. E. Whelchel, expert special agent, representing the Bureau of the Census; and R. S. Kellogg, forest assistant, and A. H. Pierson, statistician in forest products, representing the Forest Service.

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CONTENTS.

	Page.
Introduction	5
Lumber, lath, and shingles	7–67
Lumber production	10
Prices	18
Lumber production, by species	19
Yellow pine	19
Douglas fir	21
Oak	22
White pine	23
Hemlock	24
Spruce	25
Western pine	26
Maple	27
Cypress	28
Yellow poplar	29
Red gum	29
Chestnut	30
Redwood	31
Beech	32
Birch	32
Basswood	33
Elm	34
Cedar	35
Hickory	36
Ash	37
Cottonwood	38
Larch	39
Tamarack	40
Balsam fir	40
Sugar pine	41
Tupelo	41
White fir	42
Sycamore	43
Walnut	44
Cherry	44
Lodgepole pine	45
Minor species	46
Leading states and species	47
Classification of sawmills according to output	47
Shingles	53
Lath	55
Detailed summary	55
Cross-ties purchased	69–77
Preservation	75

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	Page.
Pulp-wood consumption	79–91
Consumption, by kinds of wood	79
Consumption, by states	81
Consumption, by kinds of wood and by states	84
Consumption, by process of manufacture	85
Condition of the wood	86
Imports and exports	89
Tanbark and tanning extract	93–104
Tanbark, wood, etc	95
Tanning extract	98
Imports for consumption	103
Slack cooperage stock	105–116
Staves	109
Heading	111
Hoops	114
Tight cooperage stock	117–128
Staves	120
Heading	125
Exports	128
Veneers	129–149
Poles, cross arms, brackets, and insulator pins purchased	151–162
Poles	151
Preservation	156
Cross arms, brackets, and insulator pins	159
Wood distillation	163–171
Hardwood distillation	163
Softwood distillation	167
Exports	171
Appendix—Turpentine and rosin	173–178
Products, by states	175
Exports	178

FOREST PRODUCTS OF THE UNITED STATES: 1909.

INTRODUCTION.

In this bulletin are brought together under one cover the nine separate bulletins previously issued on the statistics of forest products for 1909. The correspondence method of obtaining the information, similar to that employed for the years of 1906, 1907, and 1908, was used by the Bureau of the Census for 1909, though it was supplemented in the latter year by the returns obtained in connection with the regular decennial census. The figures given in the following pages of this bulletin are therefore exceptionally complete.

For some industries the information was collected from producers or manufacturers and for others from consumers or purchasers. If a product has a large number of consumers and relatively few producers, more accurate figures can be secured from the latter source; but if a product has relatively few consumers and widely scattered producers, the contrary is the case. Statistics on lumber, lath, shingles, veneers, cooperage stock, and wood distillation were, as in previous years, secured from the producers or manufacturers, while those on tanbark and tanning extracts, cross-ties, pulp wood, and poles, cross arms, brackets, and insulator pins were obtained from the consumers or purchasers. No figures were obtained on piles, mine timber, or fence posts.

Greater total quantities were reported for each industry in 1909 than in 1908, except in the case of tanbark and tanning extracts, while the total values reported for the same periods also amounted to greater figures in 1909, except in the tight cooperage industry. Although in 1909 increased production and greater total values compared with 1908 were the rule, the average value of the unit of product was less in 1909 for slack and tight cooperage, veneers, and softwood for distillation, while it was greater for lumber, lath, shingles, tanbark, and hardwood used for distillation.

The presentation of the data follows the general plan of the corresponding bulletins for the previous years.

A short appendix is added relating to the production of naval stores. This was prepared from information secured in connection with the Thirteenth Census. The complete report for the census of 1909 is now in course of preparation.

An estimate of the total value at the point of manufacture of the domestic forest products in 1909 figured in round numbers for the principal items, including firewood and fence posts and other miscellaneous forms, amounts to approximately $1,250,000,000, or about 19 per cent more than the corresponding estimate of values for the products of 1908.

LUMBER, LATH, AND SHINGLES.

The canvass of forest products in 1909 probably resulted in the most complete statistics on the subject ever secured. In the canvasses for the three preceding years the Bureau of the Census and the Forest Service cooperated, and the data were secured by correspondence. The two bureaus named cooperated also in the canvass of 1909, and most of the returns were secured as formerly by correspondence. However, for 1909 this method was supplemented by the work of the special agents of the quinquennial census of manufactures, who secured reports from operators neglecting to reply by mail and also from a number of firms that had not previously been listed.

As in former years, the figures for the lumber production of New York, the only state in which the state authorities make a complete annual census of forest products, were furnished by the Forest, Fish, and Game Commission of that state.

With respect to the production of lumber, lath, and shingles, the thoroughness of the 1909 canvass is indicated in a general way by the greatly increased number of sawmills represented by reports. Reports were received from more than 48,000 sawmills; and some 3,000 additional sawmills were canvassed, but found to be idle in 1909.

This total number of about 51,000 mills is nearly 18,000 greater than ever before recorded in the United States. In view of what has been stated, care should be taken not to assume that there has been as great an increase in lumber production as is indicated by the comparison of the output in 1909 with the figures for previous years. While the figures for previous years were the best that could be obtained, those for 1909 doubtless afford a better basis for future comparisons. In fact, from them may be obtained an adequate conception of the magnitude of the sawmill industry of the United States.

In Table 1 the production of lumber, lath, and shingles reported for 1909, together with the number of active mills reporting, is compared with the statistics obtained at the preceding canvasses made since 1899, inclusive.

The product reported for 1909 was 44,509,761,000 feet of lumber, 3,703,195,000 lath, and 14,907,371,000 shingles, having a total value of $724,705,760. The next greatest quantity of lumber reported was 40,256,154,000 feet, in 1907. In that year, however, only 28,850 mills reported. It is practically certain, therefore, that had the canvass of that year been as thorough as the canvass of 1909, the reported production in 1907 would have been considerably in excess of that of 1909, and probably close to fifty billion feet. The canvass of 1899 was the most complete of any previous to that of 1909, and the figures for these two years are fairly comparable. The reported production in the former year was considerably more per mill than in 1909, notwithstanding the fact that many large sawmills have begun operating in the South and West within the last 10 years. The average value of product per mill, however, was considerably less in the former year.

TABLE 1.—*Lumber, lath, and shingles—Number of active mills reporting and quantity and value of products, for specified years: 1899 to 1909.*

YEAR.	Number of active mills reporting.	LUMBER.		LATH.		SHINGLES.	
		Quantity (M feet b. m.).	Value.	Quantity (thousands).	Value.	Quantity (thousands).	Value.
1909	48,112	44,509,761	$684,479,859	3,703,195	$9,963,439	14,907,371	$30,262,462
1908	31,231	33,224,369	510,575,822	2,986,684	6,791,328	12,106,483	24,178,490
1907	28,850	40,256,154	666,641,367	3,663,602	10,342,705	11,824,475	30,111,337
1906	22,398	37,550,736	621,151,388	3,812,807	11,490,570	11,858,260	24,154,555
1904	19,127	34,135,139	435,708,084	2,647,847	5,435,968	14,547,477	24,009,610
1899	31,833	35,084,166	390,489,873	2,523,998	4,698,909	12,102,017	18,869,705

Notwithstanding the completeness of the 1909 canvass, the reports show that fewer lath were manufactured in that year than were manufactured by 26,000 fewer mills in 1906, and but few more than were manufactured by 19,000 fewer mills in 1907. In reality, therefore, there has been a decided falling off in lath production. The same is also true of shingles, although not in so marked a degree. Moreover, in the case of both lath and shingles the average value per thousand has declined since 1906. The falling off in the production of lath and shingles is due directly to the recent greatly increased use of substitutes for these materials in building operations.

The average value per thousand feet at the mill for all the lumber produced was $11.13 in 1899; $12.76 in 1904; $16.54 in 1906; $16.56 in 1907; $15.37 in 1908; and $15.38 in 1909. The average mill value of lath per thousand was $1.86 in 1899; $2.05 in 1904; $3.01 in 1906; $2.82 in 1907; $2.27 in 1908; and $2.69 in 1909. The average mill value of shingles per thousand was $1.56 in 1899; $1.65 in 1904; $2.04 in 1906; $2.55 in 1907; $2 in 1908; and $2.03 in 1909. Lumber prices declined heavily following the panic in the fall of 1907, and they have not yet entirely recovered. In fact, they were practically stationary during 1908 and 1909.

Table 2 shows, by states, the number of active and idle mills from which reports were received in 1909 and in 1908.

TABLE 2.—*Lumber, lath, and shingles—Number of active and idle mills reporting and per cent idle, by states: 1909 and 1908.*

STATE.	NUMBER OF MILLS REPORTING.							
	Total.		Active.		Idle.		Per cent idle.	
	1909	1908	1909	1908	1909	1908	1909	1908
United States	51,266	33,623	48,112	31,231	3,154	2,392	6.2	7.1
Alabama	2,321	1,095	2,188	981	133	114	5.7	10.4
Arizona	22	11	21	11	1	....	4.5	....
Arkansas	2,207	1,248	2,060	1,155	147	93	6.7	7.5
California	373	346	305	288	68	58	18.2	16.8
Colorado	300	288	250	254	50	34	16.7	11.8
Connecticut	442	312	420	293	22	19	5.0	6.1
Delaware	160	117	151	112	9	5	5.6	4.3
Florida	537	314	491	279	46	35	8.6	11.1
Georgia	2,174	1,129	2,083	1,049	91	80	4.2	7.1
Idaho	338	283	304	255	34	28	10.1	9.9
Illinois	878	578	827	546	51	32	5.8	5.5
Indiana	1,703	1,172	1,604	1,089	99	83	5.8	7.1
Iowa	367	122	350	113	17	9	4.6	7.4
Kansas	8	4	7	4	1	....	12.5	....
Kentucky	2,528	1,657	2,372	1,530	156	127	6.2	7.7
Louisiana	718	558	658	516	60	42	8.4	7.5
Maine	1,294	941	1,243	902	51	39	3.9	4.1
Maryland	751	403	729	384	22	19	2.9	4.7
Massachusetts	693	648	643	610	50	38	7.2	5.9
Michigan	1,446	1,069	1,323	989	123	80	8.5	7.5
Minnesota	804	523	745	500	59	23	7.3	4.4
Mississippi	1,899	1,014	1,795	905	104	109	5.5	10.7
Missouri	2,197	1,165	2,076	1,108	121	57	5.5	4.9
Montana	219	199	180	173	39	26	17.8	13.1
Nebraska	3	....	3	....	....	....	....	....
Nevada	1	2	1	1	....	1	....	50.0
New Hampshire	763	640	708	604	55	36	7.2	5.6
New Jersey	290	194	276	181	14	13	4.8	6.7
New Mexico	92	70	80	61	12	9	13.0	12.9
New York	2,308	2,291	2,308	2,291	....	....	....	....
North Carolina	3,451	1,876	3,307	1,740	144	136	4.2	7.2
Ohio	1,759	1,157	1,632	1,094	127	63	7.2	5.4
Oklahoma	402	228	380	214	22	14	5.5	6.1
Oregon	799	675	696	595	103	80	12.9	11.9
Pennsylvania	3,392	2,431	3,054	2,224	338	207	10.0	8.5
Rhode Island	59	47	57	45	2	2	3.4	4.3
South Carolina	1,093	455	1,048	423	45	32	4.1	7.0
South Dakota	58	51	54	47	4	4	6.9	7.8
Tennessee	2,810	1,597	2,643	1,490	167	107	5.9	6.7
Texas	779	676	719	605	60	71	7.7	10.5
Utah	103	101	88	95	15	6	14.6	5.9
Vermont	765	635	725	596	40	39	5.2	6.1
Virginia	3,681	2,070	3,511	1,937	170	133	4.6	6.4
Washington	1,216	1,021	1,143	929	73	92	6.0	9.0
West Virginia	1,637	1,160	1,524	1,044	113	116	6.9	10.0
Wisconsin	1,325	973	1,241	899	84	74	6.3	7.6
Wyoming	101	77	89	70	12	7	11.9	9.1

Apparently the fact that more than 3,000 mills were idle in 1909 would indicate that the year can not be considered a particularly prosperous one for the lumber industry, although conditions were somewhat more favorable than in 1908, when the percentage of idle mills was slightly greater than in 1909. In 1909, 6.2 per cent of the mills were idle, and the corresponding proportion for most of the important lumber-producing states does not vary greatly from this figure except in the case of California, Oregon, and Pennsylvania, where the proportion of idle mills was much greater than the general average.

LUMBER PRODUCTION.

Table 3 gives, for 1909 and 1908, the cut of lumber by states, which are arranged in the order of their rank in production in 1909.

TABLE 3.—*Lumber, lath, and shingles—Number of active mills reporting and quantity of lumber cut, with per cent of increase and per cent distribution, by states: 1909 and 1908.*

STATE.	RANK IN PRODUCTION.		NUMBER OF ACTIVE MILLS REPORTING.		QUANTITY (M FEET B. M.).		Per cent of increase.	PER CENT DISTRIBUTION OF TOTAL CUT.	
	1909	1908	1909	1908	1909	1908		1909	1908
United States..	......	......	48,112	31,231	44,509,761	33,224,369	34.0	100.0	100.0
Washington	1	1	1,143	929	3,862,916	2,915,928	32.5	8.7	8.8
Louisiana	2	2	658	516	3,551,918	2,722,421	30.5	8.0	8.2
Mississippi	3	3	1,795	905	2,572,669	1,861,016	38.2	5.8	5.6
North Carolina	4	13	3,307	1,740	2,177,715	1,136,796	91.6	4.9	3.4
Arkansas	5	4	2,060	1,155	2,111,300	1,656,991	27.4	4.7	5.0
Virginia	6	11	3,511	1,937	2,101,716	1,198,725	75.3	4.7	3.6
Texas	7	6	719	605	2,099,130	1,524,008	37.7	4.7	4.6
Wisconsin	8	5	1,241	899	2,025,038	1,613,315	25.5	4.5	4.9
Oregon	9	8	696	595	1,898,995	1,468,158	29.3	4.3	4.4
Michigan	10	7	1,323	989	1,889,724	1,478,252	27.8	4.2	4.4
Alabama	11	12	2,188	981	1,691,001	1,152,079	46.8	3.8	3.5
Minnesota	12	9	745	500	1,561,508	1,286,122	21.4	3.5	3.9
West Virginia	13	14	1,524	1,044	1,472,942	1,097,015	34.3	3.3	3.3
Pennsylvania	14	10	3,054	2,224	1,462,771	1,203,041	21.6	3.3	3.6
Georgia	15	17	2,083	1,049	1,342,249	904,668	48.4	3.0	2.7
Tennessee	16	18	2,643	1,490	1,223,849	790,642	54.8	2.7	2.4
Florida	17	20	491	279	1,201,734	730,906	64.4	2.7	2.2
California	18	15	305	288	1,143,507	996,115	14.8	2.6	3.0
Maine	19	16	1,243	902	1,111,565	929,350	19.6	2.5	2.8
South Carolina	20	23	1,048	423	897,660	560,888	60.0	2.0	1.7
Kentucky	21	21	2,372	1,530	860,712	658,539	30.7	1.9	2.0
New York	22	19	2,308	2,291	681,440	781,391	[1] 12.8	1.5	2.4
Missouri	23	26	2,076	1,108	660,159	458,938	43.8	1.5	1.4
New Hampshire	24	22	708	604	649,606	606,760	7.1	1.5	1.8
Idaho	25	24	304	255	645,800	518,625	24.5	1.5	1.6
Indiana	26	27	1,604	1,089	556,418	411,868	35.1	1.3	1.2
Ohio	27	25	1,632	1,094	542,904	459,259	18.2	1.2	1.4
Massachusetts	28	28	643	610	361,200	384,526	[1] 6.1	0.8	1.2
Vermont	29	30	725	596	351,571	304,017	15.6	0.8	0.9
Montana	30	29	180	173	308,582	311,533	[1] 0.9	0.7	0.9
Maryland	31	31	729	384	267,939	168,534	59.0	0.6	0.5
Oklahoma	32	32	380	214	225,730	158,756	42.2	0.5	0.5
Illinois	33	34	827	546	170,181	123,319	38.0	0.4	0.4
Connecticut	34	33	420	293	168,371	137,855	22.1	0.4	0.4
Colorado	35	35	250	254	141,710	117,036	21.1	0.3	0.4
Iowa	36	36	350	113	132,021	97,242	35.8	0.3	0.3
New Mexico	37	37	80	61	91,987	79,439	15.8	0.2	0.2
Arizona	38	38	21	11	62,731	43,287	44.9	0.1	0.1
New Jersey	39	40	276	181	61,620	34,930	76.4	0.1	0.1
Delaware	40	39	151	112	55,440	41,184	34.6	0.1	0.1
South Dakota	41	42	54	47	31,057	25,859	20.1	0.1	0.1
Wyoming	42	43	89	70	28,602	18,822	52.0	0.1	0.1
Rhode Island	43	41	57	45	25,489	30,528	[1] 16.5	0.1	0.1
Utah	44	44	88	95	12,638	15,059	[1] 16.1	(2)	(2)
Kansas	45	......	7	(3)	4,716	(3)	....	(2)	....
All other states [4]	......	......	[4] 4	[4] 5	11,230	10,627	5.7	(2)	(2)

[1] Decrease.

[2] Less than one-tenth of 1 per cent.

[3] Included in "All other states" for 1908.

[4] Includes Nebraska and Nevada for 1909 and Kansas and Nevada for 1908

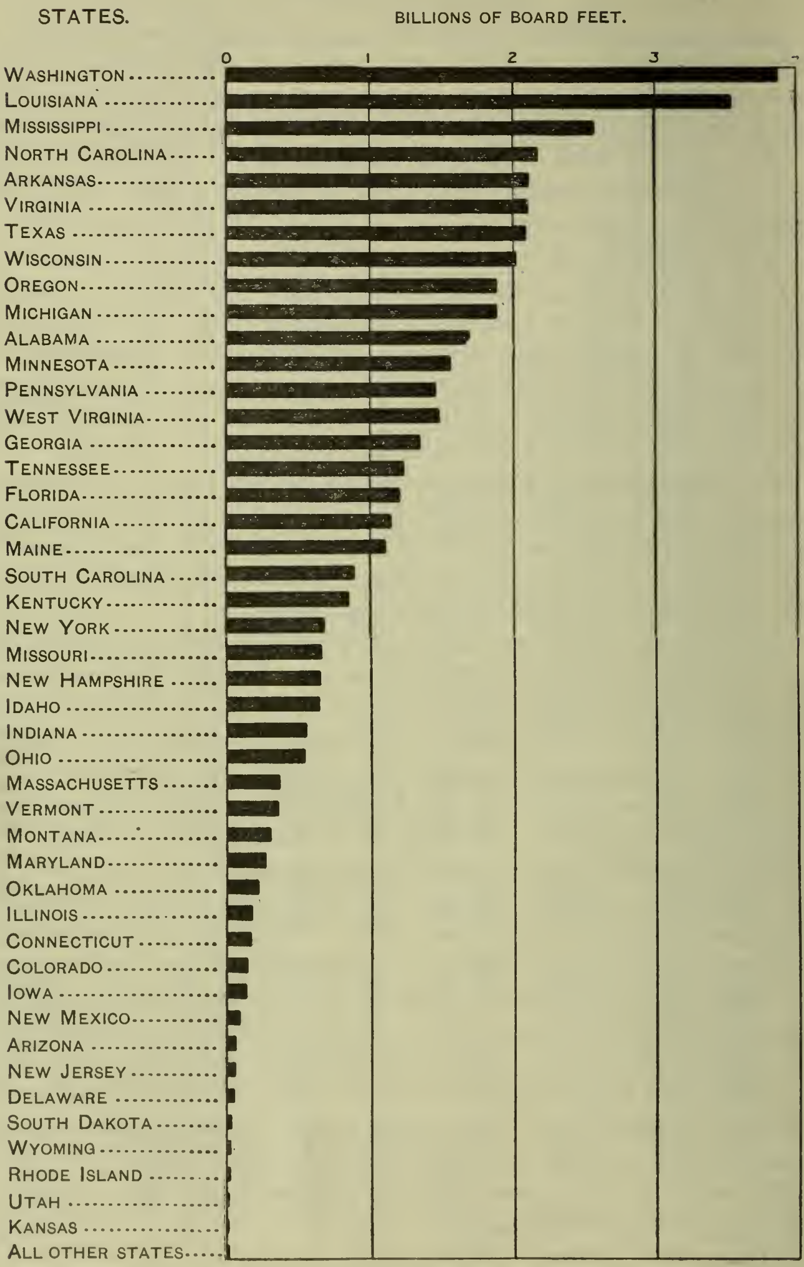
As has been the case since 1905, Washington ranks first in the amount of lumber sawed, but is followed more closely than in previous years by Louisiana, the lead of Washington in 1909 being but 311,000,000 feet. Mississippi held third place in 1909, as in the previous year. North Carolina advanced from thirteenth place in 1908 to fourth place in 1909, on account of the extremely large increase—nearly 100 per cent—in the number of mills from which reports were received. Arkansas dropped from fourth place in 1908 to fifth place in 1909. Virginia advanced from eleventh to sixth place, while Texas dropped from sixth to seventh place. The great increase in the reported production in Virginia in 1909 is, like that in North Carolina, due to the extremely large increase in the number of mills from which returns were secured. Wisconsin occupied eighth place in 1909, as compared with fifth in 1908. The canvass of 1909 was so complete that except in the case of five states considerable increases in production are shown over 1908, and in most cases even very large increases. Actual decreases occurred in New York, Massachusetts, Montana, Rhode Island, and Utah.

The magnitude and wide distribution of the lumber industry is shown by the fact that in 1909, 8 states produced more than two billion feet of lumber each, and 19 states more than one billion feet each. The total production of these 19 states amounted to 82 per cent of the lumber cut of the entire United States.

The table also brings out clearly the great difference in the average size of the sawmills in the different states. In 1909 the 658 active mills in Louisiana produced an average of 5,400,000 feet of lumber each, and the 305 active mills in California an average of 3,750,000 feet each. Extremely large mills are found in Louisiana, where yellow pine and cypress are sawed, and in California, where redwood and western pine are sawed. In contrast to these large operations, the 2,308 active mills in New York produced an average of only 295,000 feet of lumber each in 1909, and the 3,054 active mills in Pennsylvania, an average of 479,000 feet each. While there are some large mills in both these states, they are comparatively few, and many of the mills are small portable ones of very limited capacity, which frequently do only custom sawing. In fact, the small mill is the logical successor of the very large one. The large mill often takes only the better and larger timber and then ceases operations, to be followed by the small mill, which clears up the remaining and second-growth timber as there is a market for it in each locality.

The rank of the various states in lumber production in 1909 is shown graphically in Diagram 1.

DIAGRAM 1.—*Lumber production, by states: 1909.*



In order to show more accurately the recent changes in centers of lumber production, Table 4 has been prepared, which compares the production in 1909 with the more comparable figures for 1899. The states are arranged in the rank of their 1909 output.

TABLE 4.—*Lumber, lath, and shingles—Rank in production and quantity of lumber cut, with per cent of increase, and per cent distribution, by states: 1909 and 1899.*

STATE.	RANK IN PRODUCTION.		QUANTITY (M FEET B. M.).		Per cent of increase.	PER CENT DISTRIBUTION OF TOTAL CUT.	
	1909	1899	1909	1899		1909	1899
United States	....	....	44,509,761	35,077,595	26.9	100.0	100.0
Washington	1	6	3,862,916	1,429,032	170.3	8.7	4.1
Louisiana	2	11	3,551,918	1,115,366	218.5	8.0	3.2
Mississippi	3	10	2,572,669	1,206,265	113.3	5.8	3.4
North Carolina	4	8	2,177,715	1,286,638	69.3	4.9	3.7
Arkansas	5	5	2,111,300	1,623,987	30.0	4.7	4.6
Virginia	6	15	2,101,716	959,119	119.1	4.7	2.7
Texas	7	9	2,099,130	1,232,404	70.3	4.7	3.5
Wisconsin	8	1	2,025,038	3,389,166	[1] 40.2	4.5	9.7
Oregon	9	23	1,898,995	734,538	158.5	4.3	2.1
Michigan	10	2	1,889,724	3,018,338	[1] 37.4	4.2	8.6
Alabama	11	12	1,691,001	1,101,386	53.5	3.8	3.1
Minnesota	12	3	1,561,508	2,342,338	[1] 33.3	3.5	6.7
West Virginia	13	20	1,472,942	778,051	89.3	3.3	2.2
Pennsylvania	14	4	1,462,771	2,333,278	[1] 37.3	3.3	6.7
Georgia	15	7	1,342,249	1,311,917	2.3	3.0	3.7
Tennessee	16	16	1,223,849	950,958	28.7	2.7	2.7
Florida	17	18	1,201,734	790,373	52.0	2.7	2.3
California	18	22	1,143,507	737,035	55.1	2.6	2.1
Maine	19	19	1,111,565	784,647	41.7	2.5	2.2
South Carolina	20	26	897,660	466,429	92.5	2.0	1.3
Kentucky	21	21	860,712	774,651	11.1	1.9	2.2
New York	22	17	681,440	878,448	[1] 22.4	1.5	2.5
Missouri	23	24	660,159	723,754	[1] 8.8	1.5	2.1
New Hampshire	24	25	649,606	572,447	13.5	1.5	1.6
Idaho	25	36	645,800	65,363	888.0	1.5	0.2
Indiana	26	13	556,418	1,036,999	[1] 46.3	1.3	3.0
Ohio	27	14	542,904	990,497	[1] 45.2	1.2	2.8
Massachusetts	28	30	361,200	344,190	4.9	0.8	1.0
Vermont	29	28	351,571	375,809	[1] 6.4	0.8	1.1
Montana	30	31	308,582	255,685	20.7	0.7	0.7
Maryland	31	32	267,939	183,711	45.8	0.6	0.5
Oklahoma	32	41	225,730	22,104	921.2	0.5	0.1
Illinois	33	27	170,181	388,469	[1] 56.2	0.4	1.1
Connecticut	34	34	168,371	108,093	55.8	0.4	0.3
Colorado	35	33	141,710	133,746	6.0	0.3	0.4
Iowa	36	29	132,021	352,411	[1] 62.5	0.3	1.0
New Mexico	37	40	91,987	30,880	197.9	0.2	0.1
Arizona	38	37	62,731	36,182	73.4	0.1	0.1
New Jersey	39	35	61,620	74,118	[1] 16.9	0.1	0.2
Delaware	40	38	55,440	35,955	54.2	0.1	0.1
South Dakota	41	39	31,057	31,704	[1] 2.0	0.1	0.1
Wyoming	42	44	28,602	16,963	68.6	0.1	(2)
Rhode Island	43	42	25,489	18,528	37.6	0.1	0.1
Utah	44	43	12,638	17,548	[1] 28.0	(2)	0.1
Kansas	45	45	4,716	10,665	[1] 55.8	(2)	(2)
All other states[3]	....	....	11,230	7,410	51.6	(2)	(2)

[1] Decrease.
[2] Less than one-tenth of 1 per cent.
[3] Includes Nebraska and Nevada for 1909 and Nebraska, Nevada, and North Dakota for 1899.

The total quantity of lumber sawed in the entire United States showed an increase of 26.9 per cent in 1909 as compared with 1899. In all the states bordering on the Great Lakes a marked decrease was shown. In Michigan, Wisconsin, and Minnesota the decrease was due to the diminishing white-pine supply. Illinois and Iowa shared in this decline, as formerly considerable white-pine lumber was sawed in these states from logs rafted down the Mississippi River. In 1899 the five states named sawed 9,490,722,000 feet of lumber, and in 1909 only 5,778,472,000 feet, a decrease of 39.1 per cent.

Between 1899 and 1909 the Southern North Atlantic group—New York, New Jersey, and Pennsylvania—showed a decrease of 32.9 per cent, due chiefly to the decrease in the supply of hemlock and white pine in these states. New England increased its production 21.1 per cent during the same period, owing to the heavier cutting of spruce in Maine and of the second growth of white pine in the other states of this region. The centrally situated group of hardwood states—Ohio, Indiana, West Virginia, Kentucky, and Tennessee—produced slightly more lumber in 1909 than nine years earlier. Heavy decreases in Ohio and Indiana were offset by increases in the other three states of this group.

The 10 Southern states—Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Texas, and Arkansas—produced 11,093,884,000 feet of lumber in 1899 and 19,747,092,000 feet in 1909, an increase of 78 per cent. This was due chiefly to the great increase in the magnitude of yellow-pine operations and to some extent to the heavier cut of cypress and southern hardwoods. The Pacific coast and northwest group, comprising California, Oregon, Washington, Idaho, and Montana, sawed 3,221,653,000 feet of lumber in 1899 and 7,859,800,000 feet in 1909, an increase of 144 per cent.

During the last 20 years no state has shown so high a yearly production of lumber as was attained by Michigan during the decade 1880 to 1890, and a few years thereafter, when the average annual output of that state was in excess of four billion feet. That was in the period of the greatest white-pine production, when white pine occupied as leading a position in the country's lumber supply as yellow pine does to-day. The total lumber production of the state of Michigan since 1880 has been in excess of one hundred billion feet, the bulk of it being white pine. The next highest record as a lumber-producing state is held by Wisconsin, whose total production during the last 30 years has been approximately eighty billion feet, the bulk of which was also white pine. During the same period Pennsylvania produced sixty billion feet of lumber, chiefly white pine and hemlock. The total lumber production of the United States in the last 30 years has been more than nine hundred billion feet. The per capita annual production is now approximately 500 board feet, and was probably a little greater than this in 1907.

The reported production of lumber by species in 1909 and 1908 is shown in Table 5, the species being arranged according to their rank in quantity of production in 1909.

TABLE 5.—*Lumber, lath, and shingles—Quantity of lumber cut, with per cent of increase and per cent distribution, by kinds of wood: 1909 and 1908.*

KIND OF WOOD.	Rank in production, 1909	QUANTITY (M FEET B. M.).		Per cent of increase.	PER CENT DISTRIBUTION OF TOTAL CUT.	
		1909	1908		1909	1908
Total	....	44,509,761	33,224,369	34.0	100.0	100.0
Yellow pine	1	16,277,185	11,236,372	44.9	36.6	33.8
Douglas fir	2	4,856,378	3,675,114	32.1	10.9	11.1
Oak	3	4,414,457	2,771,511	59.3	9.9	8.3
White pine	4	3,900,034	3,344,921	16.6	8.8	10.1
Hemlock	5	3,051,399	2,530,843	20.6	6.9	7.6
Spruce	6	1,748,547	1,411,992	23.8	3.9	4.2
Western pine	7	1,499,985	1,275,550	17.6	3.4	3.8
Maple	8	1,106,604	874,983	26.5	2.5	2.6
Cypress	9	955,635	743,297	28.6	2.1	2.2
Yellow poplar	10	858,500	654,122	31.2	1.9	2.0
Red gum	11	706,945	589,347	20.0	1.6	1.8
Chestnut	12	663,891	539,341	23.1	1.5	1.6
Redwood	13	521,630	404,802	28.9	1.2	1.2
Beech	14	511,244	410,072	24.7	1.1	1.2
Birch	15	452,370	386,367	17.1	1.0	1.2
Basswood	16	399,151	319,505	24.9	0.9	1.0
Elm	17	347,456	273,845	26.9	0.8	0.8
Cedar	18	346,008	272,764	26.9	0.8	0.8
Hickory	19	333,929	197,372	69.2	0.8	0.6
Ash	20	291,209	225,367	29.2	0.7	0.7
Cottonwood	21	265,600	232,475	14.2	0.6	0.7
Larch	22	264,022	239,132	10.4	0.6	0.7
Tamarack	23	157,192	143,334	9.7	0.4	0.4
Balsam fir	24	108,702	69,956	55.4	0.2	0.2
Sugar pine	25	97,191	99,809	[1]2.6	0.2	0.3
Tupelo	26	96,676	69,170	39.8	0.2	0.2
White fir	27	89,318	98,120	[1]9.0	0.2	0.3
Sycamore	28	56,511	43,332	30.4	0.1	0.1
Walnut	29	46,108	43,681	5.6	0.1	0.1
Cherry	30	24,594	18,054	36.2	0.1	0.1
Lodgepole pine	31	23,733	....	....	0.1	....
All other	....	37,557	29,819	25.9	0.1	0.1

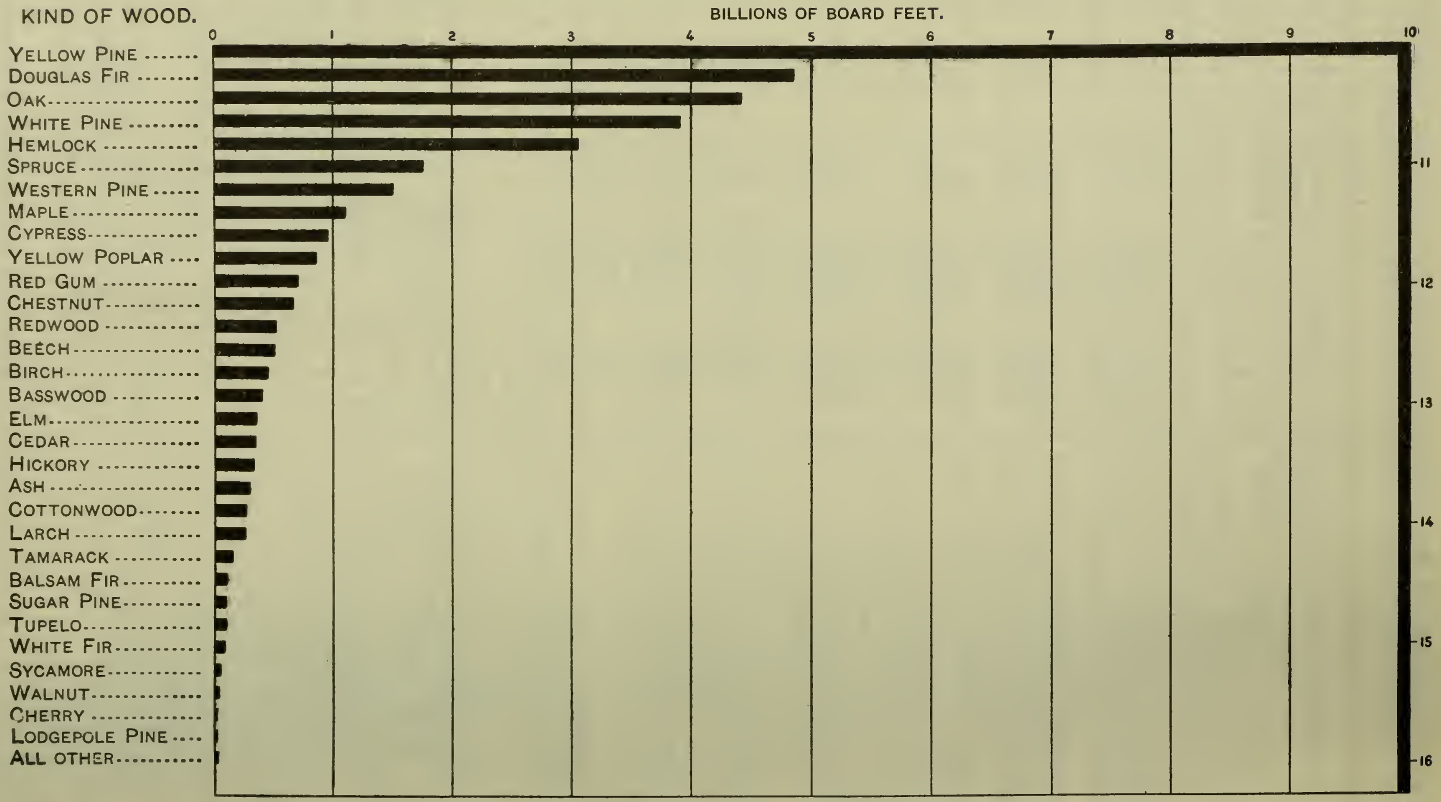
[1] Decrease.

Yellow pine has ranked first in quantity of product since the output of white pine began to fall off decidedly in the middle nineties, and in 1909 the yellow-pine output amounted to 36.6 per cent of the total, or three and one-half times as much as its nearest competitor, Douglas fir. Oak holds third place, with 9.9 per cent of the total production, while white pine has dropped to fourth place, and hemlock to fifth. Spruce and western pine ranked, respectively, sixth and seventh in both years. In 1909, for the first time, a production of more than one billion feet of maple was recorded. The eight woods named furnished 82.8 per cent of the country's lumber product in 1909.

The softwoods contributed 33,896,959,000 feet to the total product in 1909, or 76.2 per cent, and the hardwoods, 10,612,802,000 feet, or 23.8 per cent. These are approximately the same proportions that have existed for a number of years past.

The rank of the various species in respect to the quantity of lumber reported is shown graphically in Diagram 2.

Diagram 2.—*Lumber production, by kind of wood: 1909.*



A more accurate conception of the changes in recent years in the kinds of lumber produced is gained from Table 6, which compares the production by species in 1909 with that in 1899. The species are listed in the order of their rank in quantity of product in 1909.

TABLE 6.—*Lumber, lath, and shingles—Rank in production and quantity of lumber cut, with per cent of increase and per cent distribution, by kinds of wood: 1909 and 1899.*

KIND OF WOOD.	RANK IN PRODUCTION.		QUANTITY (M FEET B. M.).		Per cent of increase.	PER CENT DISTRIBUTION OF TOTAL CUT.	
	1909	1899	1909	1899		1909	1899
Total	....	....	44,509,761	35,077,595	26.9	100.0	100.0
Yellow pine	1	1	16,277,185	9,658,548	68.5	36.6	27.5
Douglas fir	2	5	4,856,378	1,736,507	179.7	10.9	5.0
Oak	3	3	4,414,457	4,438,027	[1] 0.5	9.9	12.7
White pine	4	2	3,900,034	7,742,391	[1] 49.6	8.8	22.1
Hemlock	5	4	3,051,399	3,420,673	[1] 10.8	6.9	9.8
Spruce	6	6	1,748,547	1,448,091	20.7	3.9	4.1
Western pine	7	8	1,499,985	944,560	58.8	3.4	2.7
Maple	8	9	1,106,604	633,466	74.7	2.5	1.8
Cypress	9	10	955,635	495,836	92.7	2.1	1.4
Yellow poplar	10	7	858,500	1,115,242	[1] 23.0	1.9	3.2
Red gum	11	15	706,945	285,417	147.7	1.6	0.8
Chestnut	12	18	663,891	206,688	221.2	1.5	0.6
Redwood	13	13	521,630	360,167	44.8	1.2	1.0
Beech	14	....	511,244	(2)	....	1.1	....
Birch	15	19	452,370	132,601	241.2	1.0	0.4
Basswood	16	14	399,151	308,069	29.6	0.9	0.9
Elm	17	11	347,456	456,731	[1] 23.9	0.8	1.3
Cedar	18	17	346,008	232,978	48.5	0.8	0.7
Hickory	19	20	333,929	96,636	245.6	0.8	0.3
Ash	20	16	291,209	269,120	8.2	0.7	0.8
Cottonwood	21	12	265,600	415,124	[1] 36.0	0.6	1.2
Larch	22	22	264,022	42,394	522.8	0.6	0.1
Tamarack	23	25	157,192	8,225	1,811.1	0.4	(3)
Balsam fir	24	....	108,702	(2)	....	0.2	....
Sugar pine	25	21	97,191	53,558	81.5	0.2	0.2
Tupelo	26	....	96,676	(2)	....	0.2	....
White fir	27	....	89,318	(2)	....	0.2	....
Sycamore	28	24	56,511	29,715	90.2	0.1	0.1
Walnut	29	23	46,108	38,681	19.2	0.1	0.1
Cherry	30	....	24,594	(2)	....	0.1	....
Lodgepole pine	31	....	23,733	(2)	....	0.1	....
All other	....	....	37,557	508,150	[1] 92.6	0.1	1.4

[1] Decrease. [2] Not shown separately in 1899. [3] Less than one-tenth of 1 per cent.

Owing to some extent to a more complete canvass, but chiefly to an actual increase in the quantity sawed, most of the species show heavy percentages of increase from 1899 to 1909. For yellow pine the increase was 68.5 per cent and for Douglas fir 179.7 per cent. Striking increases are shown for woods which until recent years were little used for lumber. The increase in the cut of red gum, for instance, was 147.7 per cent; in that of chestnut, 221.2 per cent; in that of birch, 241.2 per cent; and in that of larch (the western species), 522.8 per cent. The extraordinarily high percentage of increase shown for tamarack (the eastern species) is due probably to a failure to get complete reports upon the cut of this wood in 1899. The hickory supply is drawn upon heavily by the carriage and wagon industry, the stock for which is often cut directly into special forms, so that reports of hickory lumber production are somewhat misleading. Nevertheless, the great increase in the reported cut of hickory lumber in 1909 shows the heavy drains that are being made upon the remaining stands of this uniquely valuable wood.

The oak production reported in 1909 was slightly less than that in 1899. If the canvass of 1899 had been as complete as that of 1909, a much greater production in the former year would undoubtedly have been shown than was reported, so that it can be safely said that the total cut of oak is decreasing. The production of white pine fell off approximately one-half from 1899 to 1909. The cut of hemlock decreased 10.8 per cent; that of yellow poplar, 23 per cent; that of elm, 23.9 per cent; and that of cottonwood, 36 per cent.

It is to be greatly regretted that the canvasses previous to 1899 did not classify the lumber product by species, but gave only the totals for states without regard to species. Such data as are available, however, indicate a total production of white pine in the lake states since 1870 of not less than two hundred and fifty billion feet, and of yellow pine in the South since 1880 of not less than one hundred and seventy-five billion feet. Since 1899 the total production of oak lumber has been approximately forty-five billion feet, and of hemlock and Douglas fir in excess of thirty billion feet each.

PRICES.

A compilation of the average mill values of the various kinds of lumber based on the returns received since 1899, inclusive, is given in Table 7. The species are arranged in order of the average value per thousand feet reported for 1909.

TABLE 7.—*Lumber, lath, and shingles—Average value of lumber per M feet B. M., by kinds of wood for specified years: 1899 to 1909.*

KIND OF WOOD.	1909	1908	1907	1906	1904	1899	Per cent of increase, 1899–1909.
All kinds	$15.38	$15.37	$16.56	$16.54	$12.76	$11.13	38.2
Walnut	42.79	42.53	43.31	42.25	45.64	36.49	17.3
Cherry	31.30	30.36	33.99	(1)	(1)	(1)	....
Hickory	30.80	29.66	29.50	30.42	23.94	18.78	64.0
Yellow poplar	25.39	25.30	24.91	24.21	18.99	14.03	81.0
Ash	24.44	25.51	25.01	24.35	18.77	15.84	54.3
Oak	20.50	21.23	21.23	21.76	17.51	13.78	48.8
Cypress	20.46	21.30	22.12	21.94	17.50	13.32	53.6
Cedar	19.95	18.03	19.14	18.12	14.35	10.91	82.9
Basswood	19.50	20.50	20.03	18.66	16.86	12.84	51.9
White pine	18.16	18.17	19.41	18.32	14.93	12.69	43.1
Sugar pine	18.14	17.78	19.84	16.11	(1)	12.30	47.5
Cottonwood	18.05	17.76	18.42	17.15	14.92	10.37	74.0
Elm	17.52	18.40	18.45	18.08	14.45	11.47	52.7
Birch	16.95	16.42	17.37	17.24	15.44	12.50	35.6
Spruce	16.91	16.25	17.26	17.33	14.03	11.27	50.0
Lodgepole pine	16.25	(1)	(1)	(1)	(1)	(1)	....
Chestnut	16.12	16.27	17.04	17.49	13.78	13.37	20.6
Maple	15.77	16.30	16.84	15.53	14.94	11.83	33.3
Western pine	15.39	15.03	15.67	14.01	11.30	9.70	58.7
Redwood	14.80	15.66	17.70	16.64	12.83	10.12	46.2
Sycamore	14.77	14.67	14.58	(1)	(1)	11.04	33.8
Balsam fir	13.99	14.36	16.16	(1)	(1)	(1)	....
Hemlock	13.95	13.65	15.53	15.31	11.91	9.98	39.8
Beech	13.25	13.50	14.30	14.05	(1)	(1)	....
Red gum	13.20	13.08	14.10	13.46	10.87	9.63	37.1
Tamarack	13.18	12.86	15.71	15.63	12.42	12.48	5.6
White fir	13.10	11.38	15.45	12.91	(1)	(1)	....
Yellow pine	12.69	12.66	14.02	15.02	9.96	8.46	50.0
Douglas fir	12.44	11.97	14.12	14.20	9.51	8.67	43.5
Larch	12.39	11.81	13.07	11.91	8.94	8.00	54.9
Tupelo	11.87	13.36	14.48	14.13	(1)	(1)	....

[1] Not reported separately.

As previously mentioned, lumber values have not yet recovered from the losses which followed the 1907 panic, and only in the case of hickory, yellow poplar, cedar, and sycamore are the average values in 1909 greater than those shown for previous years. There has been a general rise in lumber values since 1899, but on the whole the increase has not been relatively large.

LUMBER PRODUCTION, BY SPECIES.

Tables 8 to 38 give, for each of the principal kinds of lumber, the number of active mills reporting and the amount and value of the cut in each state in 1909. The order in which the various species are presented is that of their rank in respect to the total quantity sawed. Since sawmills usually cut more than one kind of lumber, an individual mill will in many cases appear repeatedly in the series of tables.

YELLOW PINE.

Under the general term "yellow pine" is included all pine lumber reported which was produced east of the Rocky Mountains, with the exception of white, Norway, and jack pine. The term covers, therefore, several botanical species, all of which are true yellow pines. These species include those known commercially as the North Carolina and Virginia pines of the Carolinas and Virginia; the longleaf pine of the Gulf states; and the shortleaf pine of Missouri, Arkansas, and Texas.

TABLE 8.—*Lumber, lath, and shingles—Yellow pine lumber—Number of active mills reporting and quantity and value of cut, by states: 1909.*

STATE.	Number of active mills reporting.	QUANTITY.		VALUE.	
		M feet b. m.	Per cent distribution.	Total.	Average per M feet.
United States	17,359	16,277,185	100.0	$206,505,297	$12.69
Louisiana	505	2,736,756	16.8	34,127,347	12.47
Mississippi	1,470	2,114,706	13.0	28,252,472	13.36
Texas	625	2,019,423	12.4	24,435,018	12.10
North Carolina	2,635	1,575,186	9.7	19,170,014	12.17
Alabama	1,974	1,506,863	9.3	20,267,307	13.45
Arkansas	1,070	1,313,668	8.1	17,287,871	13.16
Virginia	2,227	1,221,691	7.5	14,330,435	11.73
Georgia	1,829	1,194,987	7.3	14,650,541	12.26
Florida	453	1,110,840	6.8	14,696,413	13.23
South Carolina	938	797,094	4.9	10,290,484	12.91
Missouri	455	142,271	0.9	1,648,921	11.59
Oklahoma	154	141,664	0.9	1,926,630	13.60
Tennessee	762	117,135	0.7	1,459,502	12.46
Maryland	399	97,598	0.6	1,229,735	12.60
All other states[1]	[1] 1,863	187,303	1.2	2,732,607	14.59

[1] Includes mills distributed as follows: Connecticut, 39; Delaware, 121; Kentucky, 405; Maine, 64; Massachusetts, 68; New Hampshire, 44; New Jersey, 98; Ohio, 43; Pennsylvania, 634; Rhode Island, 14; Vermont, 32; and West Virginia, 301.

In 1909, 17,359 mills cut 16,277,185,000 feet of yellow pine lumber. One-sixth of the total was reported from Louisiana, which has led in the production of yellow pine lumber for several years, while Mississippi and Texas each contributed practically one-eighth. Owing both to the greater completeness of the 1909 canvass, and to the greater activity in manufacturing in that year, the reported cut in each state in 1909 was in excess of the reported cut in 1908, and in several states, much in excess. Nine states produced over one billion feet each of yellow pine lumber in 1909, the aggregate production for these states amounting to nine-tenths of the total yellow pine cut.

The center of yellow pine production has moved westward rapidly in recent years. In 1899 Georgia ranked first, with a cut of 1,251,266,000 feet, while Louisiana ranked seventh, with a cut of 792,693,000 feet. In 1909 the cut in Georgia was nearly as great as in 1899, but on the other hand the cut in Louisiana was approximately three and one-half times as great as ten years earlier. The production of yellow pine in Mississippi in 1909 was more than twice as great as in 1899, and approximately the same ratio of increase is found in Texas. On the other hand, there was a notable increase in the output of yellow pine lumber in the Carolinas and Virginia in 1909, as compared with 1899, due to the great activity in the cutting of the loblolly pine of that region, a rapidly growing species, of which many stands have reached merchantable size since the Civil War.

The yellow pine cut in 1909 had an average mill value of $12.69 per thousand feet and there were no very marked variations from this average in the states where this lumber was principally sawed. The lowest average value per thousand feet, $11.59, was reported from Missouri, and the highest, $13.60, from Oklahoma.

DOUGLAS FIR.

Douglas fir is a common species in the Rocky Mountains and westward, but its maximum development is reached west of the Cascade Range in Washington and Oregon, and these states will always be the chief centers of Douglas fir production. The total cut in 1909, shown in Table 9, was 4,856,378,000 feet, reported by 1,499 mills. This was a greater production than was reported in 1908 and 1907, but less than in 1906, owing to the depression in the lumber industry on the Pacific coast.

Table 9.—*Lumber, lath, and shingles—Douglas fir lumber—Number of active mills reporting and quantity and value of cut, by states: 1909.*

STATE.	Number of active mills reporting.	QUANTITY.		VALUE.	
		M feet b. m.	Per cent distribution.	Total.	Average per M feet.
United States	1,499	4,856,378	100.0	$60,435,793	$12.44
Washington	564	3,060,983	63.0	38,476,556	12.57
Oregon	494	1,581,621	32.6	19,327,409	12.22
California	100	88,852	1.8	943,608	10.62
Idaho	140	63,869	1.3	793,253	12.42
Montana	106	43,270	0.9	607,944	14.05
All other states[1]	[1] 95	17,783	0.4	287,023	16.14

[1] Includes mills distributed as follows: Arizona, 4; Colorado, 49; New Mexico, 17; Utah, 14; and Wyoming, 11.

Washington contributed 63 per cent of the cut of Douglas fir in 1909, and Oregon 32.6 per cent. The average cut per mill was 5,430,000 feet in Washington and only 3,200,000 feet in Oregon, owing to the fact that Washington has many more large mills than has Oregon. The average value at the mill was $12.44 per thousand feet, 47 cents less per thousand feet than in 1908, and $1.76 less than the value in 1906, when the demand for Pacific coast lumber was much greater than at present.

The total production of Douglas fir lumber reported in 1899 was 1,736,507,000 feet, having an average value of $8.67 per thousand. Notwithstanding the low average value per thousand feet of the cut in 1909, as compared with those of 1906 and 1907, it will be seen that it was high as compared with 1899, and that the total value of the 1909 cut was four times as great as the total value in 1899.

OAK.

In 1909, 28,459 mills, situated in 39 states, reported a production of 4,414,457,000 feet of oak lumber, of which Tennessee supplied approximately one-eighth and West Virginia a little more than one-tenth. Kentucky, Virginia, and Arkansas followed in the order named. These five states produced 48.8 per cent of the total output. The range in the values of oak lumber sawed in the different states was very great, owing to the existence of different classes of timber and to conditions of local supply. The highest average value, $31.06 per thousand feet, was reported from Indiana, and the lowest, $13.51 per thousand feet, from Oklahoma.

Table 10.—*Lumber, lath, and shingles—Oak lumber—Number of active mills reporting and quantity and value of cut, by states: 1909.*

STATE.	Number of active mills reporting.	QUANTITY.		VALUE.	
		M feet b. m.	Per cent distribution.	Total.	Average per M feet.
United States	28,459	4,414,457	100.0	$90,512,069	$20.50
Tennessee	2,349	546,500	12.4	13,553,200	24.80
West Virginia	1,417	456,424	10.3	8,065,012	17.67
Kentucky	2,230	405,677	9.2	8,397,514	20.70
Virginia	2,612	387,937	8.8	5,698,795	14.69
Arkansas	1,312	358,556	8.1	7,099,409	19.80
Pennsylvania	2,422	297,154	6.7	5,824,218	19.60
Missouri	1,820	271,623	6.2	4,123,237	15.18
Ohio	1,533	259,410	5.9	6,521,567	25.14
Indiana	1,444	228,343	5.2	7,092,334	31.06
North Carolina	1,986	209,405	4.7	2,912,824	13.91
Mississippi	717	168,508	3.8	4,531,180	26.89
Illinois	807	101,279	2.3	2,031,657	20.06
Alabama	840	86,557	2.0	1,707,770	19.73
Wisconsin	736	84,391	1.9	2,049,857	24.29
Louisiana	134	74,490	1.7	1,387,749	18.63
Maryland	586	71,792	1.6	1,259,232	17.54
Oklahoma	277	60,964	1.4	823,624	13.51
Texas	161	47,252	1.1	796,196	16.85
Georgia	719	46,329	1.0	726,439	15.68
Michigan	542	40,023	0.9	1,028,191	25.69
New York	1,000	36,520	0.8	1,095,600	30.00
Connecticut	377	34,246	0.8	680,810	19.88
All other states [1]	[1] 2,438	141,077	3.2	3,105,654	22.01

[1] Includes mills distributed as follows: California, 12; Delaware, 88; Florida, 34; Iowa, 301; Kansas, 6; Maine, 323; Massachusetts, 344; Minnesota, 381; New Hampshire, 268; New Jersey, 215; Oregon, 15; Rhode Island, 52; South Carolina, 184; South Dakota, 1; Vermont, 208; Washington, 4; and Wyoming, 2.

The central hardwood states have always been prominent in the production of oak lumber, but in recent years the more southerly states of this region have rapidly come to the front. In 1899 Indiana ranked first, with a cut of 649,794,000 feet, nearly three times its output in 1909. In the same year Ohio ranked second, with a cut of 596,618,000 feet, more than twice its output in 1909. Although the total quantity of oak lumber sawed in 1909 was slightly less than in 1899, the value of the product was approximately 50 per cent greater.

WHITE PINE.

In 1909, 9,355 mills, situated in 28 states, reported some production of white pine lumber. There are included under this head the Norway pine of the Lake states and the western white pine of Montana, Idaho, and Washington, which is very similar to the white pine of the East. The total reported cut of white pine lumber in 1909 was 16.6 per cent greater than the reported cut in 1908, but this was due rather to the completeness of the canvass in 1909 than to an actual increase in production. For more than 30 years, the Lake states have led in the production of white pine lumber, and this lead is still maintained, though with a greatly decreased output, due to the exhaustion of the timber supply. In 1899 Michigan, Wisconsin, and Minnesota together produced 5,977,760,000 feet of white pine lumber, while in 1909 they produced only 2,179,268,000 feet, or less than the production of Wisconsin alone ten years earlier.

TABLE 11.—*Lumber, lath, and shingles—White pine lumber—Number of active mills reporting and quantity and value of cut, by states: 1909.*

STATE.	Number of active mills reporting.	QUANTITY.		VALUE.	
		M feet b. m.	Per cent distribution.	Total.	Average per M feet.
United States	9,355	3,900,034	100.0	$70,830,131	$18.16
Minnesota	524	1,308,861	33.6	22,551,675	17.23
Wisconsin	773	612,327	15.7	12,577,197	20.54
Maine	869	383,551	9.8	6,723,649	17.53
Michigan	632	258,080	6.6	5,752,603	22.29
New Hampshire	486	242,656	6.2	3,727,196	15.36
Massachusetts	541	222,604	5.7	3,490,431	15.68
Idaho	78	169,403	4.3	2,939,142	17.35
New York	1,263	104,658	2.7	2,537,956	24.25
North Carolina	624	96,624	2.5	1,242,585	12.86
Virginia	719	96,061	2.5	1,262,242	13.14
Pennsylvania	1,474	92,431	2.4	2,100,032	22.72
Iowa	11	80,158	2.1	2,138,615	26.68
Vermont	240	43,274	1.1	743,447	17.18
Tennessee	251	35,553	0.9	647,420	18.21
Washington	22	33,960	0.9	517,550	15.24
Georgia	206	31,324	0.8	420,681	13.43
Connecticut	209	30,579	0.8	530,240	17.34
West Virginia	181	25,986	0.7	448,258	17.25
All other states [1]	[1] 252	31,944	0.8	479,212	15.00

[1] Includes mills distributed as follows: Delaware, 6; Illinois, 3; Indiana, 8; Kentucky, 56; Maryland, 40; Montana, 7; New Jersey, 13; Ohio, 13; Rhode Island, 52; and South Carolina, 54.

While the three states named have fallen off so greatly since 1899 in the production of white pine lumber, noteworthy increases have occurred in Maine and in the southern Appalachian region. In 1909 the combined white pine production in Virginia, West Virginia, North Carolina, Tennessee, and Georgia amounted to 285,548,000 feet, as compared with only 13,232,000 feet ten years earlier. The New England states are cutting second-growth white pine steadily, and maintaining an approximately even annual output. Forest fires in the Lake states, and the more recent cutting of the original timber, have as yet prevented the development of any considerable supply of second-growth timber in that region.

A wide range in the average value of the timber is shown by the reports from the various states. The highest average value per thousand feet, $26.68, was reported from Iowa, and the lowest, $12.86, from North Carolina. There is, of course, no native white pine sawed in Iowa, the white pine lumber in that state being cut from logs floated down the Mississippi River.

HEMLOCK.

Hemlock is another species the cut of which is decreasing because of the exhaustion of the available timber supply. The cut of 3,051,399,000 feet in 1909 was 10.8 per cent less than the cut in 1899.

TABLE **12.**—*Lumber, lath, and shingles—Hemlock lumber—Number of active mills reporting and quantity and value of cut, by states: 1909.*

STATE.	Number of active mills reporting.	QUANTITY.		VALUE.	
		M feet b. m.	Per cent distribution.	Total.	Average per M feet.
United States	8,572	3,051,399	100.0	$42,580,800	$13.95
Wisconsin	629	709,347	23.2	8,554,725	12.06
Pennsylvania	1,547	687,005	22.5	12,063,808	17.56
Michigan	796	614,622	20.1	7,289,417	11.86
West Virginia	538	279,832	9.2	4,144,312	14.81
New York	1,781	162,784	5.3	2,718,493	16.70
Maine	687	109,581	3.6	1,537,421	14.03
Washington	107	103,268	3.4	1,089,477	10.55
New Hampshire	437	66,898	2.2	1,004,808	15.02
Vermont	517	62,345	2.0	896,521	14.38
Virginia	264	42,359	1.4	551,514	13.02
North Carolina	196	40,018	1.3	464,609	11.61
Tennessee	199	35,593	1.2	485,489	13.64
Kentucky	136	27,036	0.9	359,849	13.31
Massachusetts	333	24,797	0.8	386,585	15.59
Oregon	30	24,794	0.8	220,419	8.89
Maryland	47	20,912	0.7	271,229	12.97
Minnesota	7	15,552	0.5	202,176	13.00
All other states [1]	[1] 321	24,656	0.8	339,948	13.79

[1] Includes mills distributed as follows: California, 4; Connecticut, 210; Georgia, 17; Idaho, 2; Indiana, 4; Iowa, 2; New Jersey, 10; Ohio, 59; Rhode Island, 9; and South Carolina, 4.

For many years Pennsylvania was the leading state in the production of hemlock lumber, but in 1908 it was surpassed by Wisconsin, which state will probably hold the lead for some time to come. Pennsylvania, Wisconsin, and Michigan supplied practically two-thirds of the hemlock lumber produced in 1909. The cut in

Wisconsin in 1909 was 77.5 per cent greater than in 1899, while in Michigan it was 27 per cent less, and in Pennsylvania 55.9 per cent less. A remarkable increase in the production of hemlock lumber has taken place in West Virginia, the cut of 279,832,000 feet in 1909 being over three times as great as the cut in 1899. The state of Washington produced more than one hundred million feet of hemlock lumber in 1909, a heavier cut than was reported in any previous year, although it is probable that had the canvass been as complete in 1906 as in 1909 a greater production would have been shown for that year than for 1909. The Washington hemlock is a different species from the eastern hemlock, and large quantities of it will eventually be cut as the timber becomes more valuable.

The average value per thousand feet of all the hemlock lumber manufactured in 1909 was $13.95. The highest average, $17.56, was reported from Pennsylvania, and the lowest, $8.89, from Oregon.

SPRUCE.

The reported production of spruce lumber has remained practically stationary during the last 10 years, and the cut of 1,748,547,000 feet reported in 1909 was only slightly greater than the reported production in 1907. It is certain, however, that had it been practicable to make as complete a canvass in 1907 as was made in 1909, the reported production in the former year would have been considerably in excess of the reported cut in 1909. It is probable, therefore, that the production of spruce lumber has passed its maximum.

Table 13.—*Lumber, lath, and shingles—Spruce lumber—Number of active mills reporting and quantity and value of cut, by states: 1909.*

STATE.	Number of active mills reporting	QUANTITY.		VALUE.	
		M feet b. m.	Per cent distribution.	Total.	Average per M feet.
United States	4,279	1,748,547	100.0	$29,561,315	$16.91
Maine	750	421,297	24.1	7,267,373	17.25
New Hampshire	411	253,107	14.5	4,773,598	18.86
West Virginia	249	242,897	13.9	4,360,001	17.95
Washington	90	165,331	9.4	2,584,124	15.63
New York	449	127,864	7.3	2,493,348	19.50
Vermont	528	123,164	7.0	2,091,325	16.98
Virginia	291	79,672	4.6	1,097,083	13.77
Minnesota	201	78,500	4.5	1,191,630	15.18
Oregon	48	57,002	3.3	722,215	12.67
Massachusetts	166	36,911	2.1	752,984	20.40
Colorado	105	32,471	1.9	388,028	11.95
North Carolina	113	24,277	1.4	241,313	9.94
Michigan	210	21,797	1.2	329,571	15.12
Wisconsin	129	21,168	1.2	372,345	17.59
South Carolina	58	13,803	0.8	132,647	9.61
California	28	13,241	0.8	196,099	14.81
All other states[1]	[1] 453	36,045	2.1	567,631	15.75

[1] Includes mills distributed as follows: Arizona, 1; Connecticut, 29; Delaware, 10; Georgia, 22; Idaho, 14; Kentucky, 49; Maryland, 63; Montana, 38; New Jersey, 4; New Mexico, 23; Ohio, 7; Pennsylvania, 129; Rhode Island, 2; Tennessee, 23; Utah, 27; and Wyoming, 12.

Maine has always been the chief center of spruce lumber production, and this state contributed nearly one-fourth of the total cut in 1909. New Hampshire ranked second, with a cut of approximately one-fourth of a billion feet, and West Virginia a close third, with some 10,000,000 feet less than New Hampshire.

The cut of spruce in Maine in 1909 was slightly greater than the cut in 1899. Vermont, however, which ranked second in 1899, with a cut of 254,853,000 feet, reported less than one-half as much in 1909, and ranked sixth in the latter year. Practically the same relative decrease occurred in New York. On the other hand, a heavy increase in spruce-lumber production was reported from the Virginias and the Carolinas. In 1909 these four states produced 360,649,000 feet, as compared with only 95,467,000 feet in 1899. Spruce-lumber production in Washington is increasing, and the cut in that state in 1909 was twice as great as ten years earlier.

The reports show a wide range of values for spruce lumber. The highest average for an entire state in 1909 was $20.40, in Massachusetts, and the lowest, $9.61, in South Carolina.

WESTERN PINE.

By the term "western pine" is meant the western yellow pine, known botanically as *Pinus ponderosa*, although it is probable that small quantities of lumber cut from other western pines are included under this head. Up to 1909 lodgepole pine was commonly thus classed, but in the year named was for the first time reported separately.

Table 14.—*Lumber, lath, and shingles—Western pine lumber—Number of active mills reporting and quantity and value of cut, by states: 1909.*

STATE.	Number of active mills reporting.	QUANTITY.		VALUE.	
		M feet b. m.	Per cent distribution.	Total.	Average per M feet.
United States	1,347	1,499,985	100.0	$23,077,854	$15.39
California	184	364,748	24.3	6,752,076	18.51
Washington	228	266,357	17.8	3,609,137	13.55
Idaho	212	254,283	17.0	3,824,416	15.04
Oregon	197	169,592	11.3	2,279,316	13.44
Montana	110	146,890	9.8	2,351,709	16.01
Colorado	161	95,254	6.4	1,369,752	14.38
New Mexico	72	82,739	5.5	1,185,650	14.33
Arizona	16	57,089	3.8	740,444	12.97
South Dakota	50	30,234	2.0	468,929	15.51
Wyoming	61	15,304	1.0	211,195	13.80
All other states[1]	[1] 56	17,495	1.2	285,230	16.30

[1] Includes mills distributed as follows: Nevada, 1, and Utah, 55.

Pinus ponderosa is widely distributed throughout the western half of the United States. The conditions most favorable for its growth are found in California, Oregon, and Washington, and these three states, together with Idaho, supplied seven-tenths of the western pine lumber sawed in 1909. The reported cut in 1909 was 17.6 per cent greater than the reported cut in 1908, but less than that in 1907. There is a great deal of western pine stumpage, however, and with more favorable market conditions the cut of this timber will increase heavily. The output in 1909 was 58.8 per cent greater than in 1899.

The average mill value of all the western pine lumber sawed was $15.39 per thousand feet, which was considerably in excess of the average value of the two other leading kinds of Pacific coast lumber—Douglas fir and redwood. *Pinus ponderosa* is used in many eastern factories in place of white pine, which partially accounts for the fact that the average value of the western pine lumber cut in California was 11 cents per thousand feet greater than the average value of the sugar-pine lumber produced in that state.

MAPLE.

In 1909, 10,858 sawmills produced 1,106,604,000 feet of maple lumber, having an average value at the mill of $15.77 per thousand feet. Although this is the largest production of maple lumber ever reported, it is probable that the actual cut in 1907 was greater than that in 1909.

TABLE 15.—*Lumber, lath, and shingles—Maple lumber—Number of active mills reporting and quantity and value of cut, by states: 1909.*

STATE.	Number of active mills reporting.	QUANTITY.		VALUE.	
		M feet b. m.	Per cent distribution.	Total.	Average per M feet.
United States	10,858	1,106,604	100.0	$17,447,814	$15.77
Michigan	961	543,214	49.1	8,664,263	15.95
Wisconsin	651	109,925	9.9	1,485,087	13.51
Pennsylvania	1,421	91,654	8.3	1,546,203	16.87
New York	1,381	75,024	6.8	1,350,432	18.00
West Virginia	468	53,782	4.9	682,494	12.69
Ohio	1,053	43,852	4.0	732,767	16.71
Indiana	1,014	43,644	3.9	826,617	18.94
Vermont	393	27,533	2.5	409,416	14.87
Arkansas	100	18,500	1.7	260,480	14.08
Maine	280	16,714	1.5	286,144	17.12
Missouri	434	10,376	0.9	149,103	14.37
Kentucky	419	9,069	0.8	126,422	13.94
Tennessee	209	8,610	0.8	135,349	15.72
New Hampshire	189	7,892	0.7	109,857	13.92
All other states[1]	[1] 1,885	46,815	4.2	683,180	14.59

[1] Includes mills distributed as follows: Alabama, 29; Connecticut, 188; Delaware, 19; Georgia, 34; Illinois, 319; Iowa, 193; Kansas, 2; Louisiana, 4; Maryland, 146; Massachusetts, 221; Minnesota, 126; Mississippi, 30; New Jersey, 45; North Carolina, 251; Oklahoma, 23; Oregon, 12; Rhode Island, 23; South Carolina, 18; Texas, 3; Virginia, 190; and Washington, 9.

Michigan stands unrivaled as the center of maple lumber production, supplying 49.1 per cent of the total in 1909. Wisconsin, which ranked second, produced approximately one-fifth as much as Michigan, but it is probable that the production in Michigan has passed its maximum, while the highest point has not yet been reached in Wisconsin. As with numerous other species, the increasing demand has led to a heavier production in the states where formerly little maple was cut. Among these are West Virginia, Arkansas, and other Southern states. The cut has also increased decidedly in New York, Pennsylvania, Ohio, and Indiana.

The highest average value for maple lumber in 1909, $18.94 per thousand feet, was reported from Indiana, and the lowest, $12.69, from West Virginia.

CYPRESS.

Cypress is a timber the production of which is chiefly confined to a single state. Louisiana has always been far in the lead in cutting this lumber, and in 1909 reported nearly two-thirds of the total production of 955,635,000 feet. The rest of the cut was widely distributed through the South, from Florida to Missouri.

Table 16.—*Lumber, lath, and shingles—Cypress lumber—Number of active mills reporting and quantity and value of cut, by states: 1909.*

STATE.	Number of active mills reporting.	QUANTITY.		VALUE.	
		M feet b. m.	Per cent distribution.	Total.	Average per M feet.
United States	1,504	955,635	100.0	$19,549,741	$20.46
Louisiana	153	608,854	63.7	12,554,569	20.62
Florida	85	84,811	8.9	2,093,984	24.69
Arkansas	309	55,012	5.8	899,446	16.35
Mississippi	209	41,666	4.4	924,152	22.18
South Carolina	55	36,040	3.8	622,411	17.27
North Carolina	150	34,506	3.6	652,854	18.92
Missouri	125	32,891	3.4	522,309	15.88
Georgia	84	27,517	2.9	588,589	21.39
Tennessee	73	8,709	0.9	213,719	24.54
Alabama	38	6,650	0.7	145,635	21.90
Kentucky	77	5,607	0.6	84,554	15.08
All other states [1]	[1] 146	13,372	1.4	247,519	18.51

[1] Includes mills distributed as follows: Delaware, 4; Illinois, 51; Indiana, 6; Maryland, 12; Oklahoma, 1; Texas, 8; and Virginia, 64.

The production of cypress lumber has probably reached its maximum, though owing to the completeness of the 1909 canvass the output reported for that year was greater than that reported for any previous year. The production in 1909 was 92.7 per cent greater than the production in 1899.

Cypress is one of the higher-priced woods, and in 1909 an average price at the mill of $20.46 per thousand feet was reported. The highest average value per thousand feet was $24.69, in Florida, and the lowest, $15.08, in Kentucky. The output in the latter state was very small.

YELLOW POPLAR.

Yellow poplar is the species botanically known as *Liriodendron tulipifera,* and is in nowise related to the common poplars of the North, which belong to the genus *Populus.*

The output of this wood is steadily decreasing, the cut of 858,500,000 feet in 1909 being 23 per cent less than the production in 1899.

TABLE **17.**—*Lumber, lath, and shingles— Yellow poplar lumber—Number of active mills reporting and quantity and value of cut, by states: 1909.*

STATE.	Number of active mills reporting.	QUANTITY.		VALUE.	
		M feet b. m.	Per cent distribution.	Total.	Average per M feet.
United States	10,770	858,500	100.0	$21,799,854	$25.39
Tennessee	1,538	164,826	19.2	4,367,889	26.50
West Virginia	963	154,581	18.0	4,173,687	27.00
Kentucky	1,429	149,808	17.4	4,175,149	27.87
Virginia	1,319	114,503	13.3	2,622,119	22.90
North Carolina	1,270	74,285	8.7	1,410,672	18.99
Ohio	752	42,317	4.9	1,310,134	30.96
Alabama	531	38,324	4.5	814,385	21.25
Indiana	813	29,174	3.4	951,948	32.63
Mississippi	315	25,833	3.0	607,334	23.51
Georgia	389	21,472	2.5	403,674	18.80
Pennsylvania	582	14,727	1.7	337,985	22.95
South Carolina	106	7,644	0.9	164,193	21.48
All other states [1]	[1] 763	21,006	2.4	460,685	21.93

[1] Includes mills distributed as follows: Arkansas, 49; Delaware, 23; Florida, 11; Illinois, 101; Louisiana, 18; Maryland, 185; Missouri, 86; New Jersey, 48; and New York, 242.

Tennessee, West Virginia, and Kentucky have long been the center of production of yellow poplar lumber, and the lead has been alternately held by each of these states. In 1909 Tennessee ranked first, with slightly less than one-fifth of the total output, while West Virginia and Kentucky followed closely. The total production of yellow poplar lumber reported for these three states in 1909 was 469,215,000 feet, a decrease of 36.2 per cent from the production in 1899.

Yellow poplar is the most valuable lumber in the United States which is produced on a large scale, and in the last few years the highest grades have advanced markedly in price owing to the demand for this class of stock in the manufacture of automobile bodies. In consequence the price of yellow poplar lumber, unlike that of most other species, has shown no decrease since the panic of 1907. In 1909 the highest average price per thousand feet, $32.63, was reported from Indiana, and the lowest, $18.80, from Georgia.

RED GUM.

Red gum is one of the species which has occupied a prominent place in lumber production only within the last few years. The cut of 706,945,000 feet in 1909 was much more than twice as great as the production in 1899. It is probable, however, that the production of red gum lumber in 1907 was even greater than that reported in 1909.

TABLE 18.—*Lumber, lath, and shingles—Red gum lumber—Number of active mills reporting and quantity and value of cut, by states: 1909.*

STATE.	Number of active mills reporting.	QUANTITY.		VALUE.	
		M feet b. m.	Per cent distribution.	Total.	Average per M feet.
United States	4,743	706,945	100.0	$9,334,268	$13.20
Arkansas	643	200,953	28.4	2,529,998	12.59
Mississippi	470	120,731	17.1	1,634,698	13.54
Missouri	282	83,905	11.9	1,005,182	11.98
Tennessee	566	75,565	10.7	1,194,683	15.81
Kentucky	609	42,072	6.0	532,211	12.65
Louisiana	78	34,499	4.9	445,382	12.91
North Carolina	241	30,883	4.4	408,891	13.24
Indiana	490	23,649	3.3	365,614	15.46
Texas	77	18,898	2.7	229,044	12.12
Alabama	184	17,092	2.4	246,125	14.40
South Carolina	33	14,651	2.1	190,023	12.97
Virginia	214	13,760	1.9	159,616	11.60
Illinois	161	9,748	1.4	130,623	13.40
All other states [1]	[1] 695	20,539	2.9	262,178	12.76

[1] Includes mills distributed as follows: Delaware, 37; Florida, 6; Georgia, 65; Maryland, 134; New Jersey, 21; Ohio, 140; Oklahoma, 19; Pennsylvania, 138; and West Virginia, 135.

Arkansas is easily in the lead in the production of red gum lumber, and in 1909 contributed 28.4 per cent of the total. Mississippi ranked second, with 17.1 per cent of the total, while Missouri and Tennessee, which produced nearly equal amounts, stood third and fourth, respectively. These four states together supplied 68.1 per cent of all the red gum sawed in 1909.

Although red gum is a very useful wood, and the highest grades bring good prices, the average price of the total output is low. The red gum lumber sawed in Tennessee in 1909 brought the highest price at the mill reported for any state, $15.81 per thousand feet, while the lowest average price, $11.60, was reported from Virginia.

CHESTNUT.

Chestnut is another species which has only recently been cut on a considerable scale for lumber. The production of 663,891,000 feet in 1909 was more than three times as great as the cut in 1899, though less than the actual output in 1907. West Virginia is just coming to the front in the production of chestnut lumber, and the output in that state in 1909 exceeded by some 12,000,000 feet the cut in Pennsylvania, which had previously ranked first. Connecticut, Tennessee, and Virginia followed Pennsylvania in close order, and together the five states named contributed two-thirds of the total chestnut lumber production of 1909.

TABLE 19.—*Lumber, lath, and shingles—Chestnut lumber—Number of active mills reporting and quantity and value of cut, by states: 1909.*

STATE.	Number of active mills reporting.	QUANTITY.		VALUE.	
		M feet b. m.	Per cent distribution.	Total.	Average per M feet.
United States	8,968	663,891	100.0	$10,703,130	$16.12
West Virginia	904	119,762	18.0	1,903,018	15.89
Pennsylvania	1,944	107,838	16.2	1,762,073	16.34
Connecticut	408	77,604	11.7	1,299,091	16.74
Tennessee	920	71,962	10.8	1,121,888	15.59
Virginia	961	67,996	10.2	945,824	13.91
North Carolina	675	49,738	7.5	763,478	15.35
Kentucky	763	35,648	5.4	565,021	15.85
Maryland	344	32,251	4.9	457,964	14.20
Massachusetts	308	28,831	4.3	501,371	17.39
New York	667	18,829	2.8	376,580	20.00
Ohio	531	16,424	2.5	300,395	18.29
New Jersey	164	14,722	2.2	328,301	22.30
Rhode Island	52	6,936	1.0	115,207	16.61
New Hampshire	79	4,338	0.7	73,442	16.93
All other states [1]	[1] 248	11,012	1.7	189,477	17.21

[1] Includes mills distributed as follows: Alabama, 42; Delaware, 23; Georgia, 42; Indiana, 102; Maine, 4; Mississippi, 19; South Carolina, 4; and Vermont, 12.

Connecticut has long been prominent in the production of chestnut lumber, but it is only recently that much has been produced in the Southern Appalachian states, which are now together furnishing about one-half the total output.

The average value of all the chestnut lumber sawed in 1909 was $16.12 per thousand feet. The highest price, $22.30, was reported from New Jersey, and the lowest, $13.91, from Virginia.

REDWOOD.

Redwood is the only important kind of lumber the production of which is limited to one state. California has no competitor in its production, nor can it ever have, since there is no commercial supply of redwood timber elsewhere. The output in 1909 was 521,630,000 feet, decidedly less than in both 1907 and 1906, since the market for redwood was affected by the same depressing causes as was that for Douglas fir. The number of active mills reporting in 1909 was 69, and the total value of the output $7,720,124.

The redwood cut in 1909 was 44.8 per cent greater than the cut in 1899. The average value per thousand feet in 1909 was $14.80, compared with $10.09 ten years earlier. The value in 1909, however, was nearly $3 per thousand feet less than in 1907.

TABLE 20.—*Lumber, lath, and shingles—Redwood lumber—Number of active mills reporting and quantity and value of cut, by states: 1909.*

STATE.	Number of active mills reporting.	QUANTITY.		VALUE.	
		M feet b. m.	Per cent distribution.	Total.	Average per M feet.
United States	69	521,630	100.0	$7,720,124	$14.80
California	69	521,630	100.0	7,720,124	14.80

BEECH.

In 1909, 7,701 sawmills cut 511,244,000 feet of beech lumber, having a total value at the mill of $6,773,006. The significance of this statement will be better appreciated when it is said that so little beech lumber was sawed in 1899 that the census of that year did not list this wood separately.

TABLE 21.—*Lumber, lath, and shingles—Beech lumber—Number of active mills reporting and quantity and value of cut, by states: 1909.*

STATE.	Number of active mills reporting.	QUANTITY.		VALUE.	
		M feet b. m.	Per cent distribution.	Total.	Average per M feet.
United States	7,701	511,244	100.0	$6,773,006	$13.25
Michigan	632	111,340	21.8	1,357,235	12.19
Indiana	1,182	98,729	19.3	1,487,846	15.07
Pennsylvania	838	57,285	11.2	751,006	13.11
Ohio	1,070	49,421	9.7	750,211	15.18
New York	925	42,334	8.3	613,843	14.50
Kentucky	815	36,953	7.2	451,196	12.21
West Virginia	435	36,722	7.2	399,903	10.89
Tennessee	435	18,341	3.6	201,751	11.00
Vermont	310	16,452	3.2	211,737	12.87
Maine	193	9,638	1.9	146,112	15.16
Wisconsin	84	9,444	1.8	106,056	11.23
New Hampshire	117	8,397	1.6	105,886	12.61
Massachusetts	134	4,685	0.9	59,593	12.72
Maryland	74	2,968	0.6	30,897	10.41
All other states [1]	[1] 457	8,535	1.7	99,734	11.69

[1] Includes mills distributed as follows: Alabama, 48; Arkansas, 6; Connecticut, 59; Delaware, 8; Georgia, 8; Illinois, 52; Louisiana, 7; Mississippi, 23; Missouri, 14; New Jersey, 17; North Carolina, 62; Rhode Island, 4; South Carolina, 1; Texas, 3; and Virginia, 145.

Michigan ranks first in the amount of beech lumber sawed, while Indiana ranks first in the value of the output. These two states, together with Pennsylvania, furnished over one-half of the total production in 1909. The average value per thousand feet ranged from $10.41 in Maryland to $15.18 in Ohio.

BIRCH.

Birch is another northern hardwood which has come to figure extensively in lumbering operations within the last few years in regions where the white-pine supply has been exhausted. The total production of birch lumber in 1909 was 452,370,000 feet, or more than three times as much as in 1899.

TABLE 22.—*Lumber, lath, and shingles—Birch lumber—Number of active mills reporting and quantity and value of cut, by states: 1909.*

STATE.	Number of active mills reporting.	QUANTITY.		VALUE.	
		M feet b. m.	Per cent distribution.	Total.	Average per M feet.
United States	4,608	452,370	100.0	$7,666,186	$16.95
Wisconsin	571	179,692	39.7	2,889,447	16.08
Michigan	462	64,341	14.2	1,025,596	15.94
Maine	425	62,812	13.9	1,222,322	19.46
Vermont	402	33,450	7.4	529,848	15.84
New York	688	31,990	7.1	703,780	22.00
Pennsylvania	582	21,650	4.8	408,968	18.89
West Virginia	148	14,579	3.2	222,476	15.26
New Hampshire	228	13,723	3.0	210,374	15.33
Minnesota	197	9,785	2.2	149,710	15.30
Massachusetts	161	8,908	2.0	127,028	14.26
All other states [1]	[1] 744	11,440	2.5	176,637	15.44

[1] Includes mills distributed as follows: Arkansas, 7; Connecticut, 96; Delaware, 2; Georgia, 2; Illinois, 65; Indiana, 76; Iowa, 44; Kentucky, 61; Maryland, 39; Mississippi, 2; Missouri, 139; New Jersey, 8; North Carolina, 60; Ohio, 30; Oklahoma, 5; Rhode Island, 7; Tennessee, 49; Texas, 1; and Virginia, 51.

Wisconsin maintains a steady lead in the output of birch lumber, and in 1909 produced nearly two-fifths of the total. Michigan and Maine each produced approximately one-seventh of the total, and were followed by Vermont and New York, each reporting about one-half the output of Michigan or Maine.

Birch is beginning to take rank as one of the more valuable woods, and the average value of all the birch cut in 1909 was $16.95 per thousand feet. The highest average value, $22, was reported from New York, and the lowest, $14.26, from Massachusetts.

BASSWOOD.

In 1909 nearly 7,000 sawmills cut approximately 400,000,000 feet of basswood lumber. In the production of this kind of lumber Wisconsin is nearly as far in the lead as it is in the manufacture of birch. Michigan ranks second in the amount of basswood lumber produced, as it also does in the case of birch.

In 1909 Wisconsin and Michigan together cut one-half of the total output of basswood lumber, and the balance was contributed by 26 states, none of which cut large quantities. Although the reported production in 1909 was somewhat larger than ever before, it is certain that the actual production in both 1906 and 1907 was larger than that actually cut in 1909. The production of basswood lumber in Wisconsin in 1909 was 24.7 per cent less than in 1899, and it is probable that the maximum output of this timber has been passed.

TABLE 23.—*Lumber, lath, and shingles—Basswood lumber—Number of active mills reporting and quantity and value of cut, by states: 1909.*

STATE.	Number of active mills reporting.	QUANTITY.		VALUE.	
		M feet b. m.	Per cent distribution.	Total.	Average per M feet.
United States	6,973	399,151	100.0	$7,781,563	$19.50
Wisconsin	763	133,887	33.5	2,539,836	18.97
Michigan	737	69,453	17.4	1,469,625	21.16
New York	1,323	36,058	9.0	644,717	17.88
West Virginia	422	29,679	7.4	595,658	20.07
Minnesota	352	20,131	5.0	344,240	17.10
Ohio	575	16,007	4.0	365,280	22.82
Indiana	392	13,917	3.5	339,296	24.38
Pennsylvania	508	13,008	3.3	281,363	21.63
Tennessee	191	11,463	2.9	221,007	19.28
Vermont	280	10,478	2.6	178,859	17.07
Kentucky	215	10,056	2.5	182,114	18.11
Virginia	174	9,658	2.4	176,452	18.27
North Carolina	180	6,387	1.6	105,833	16.57
Maine	144	4,123	1.0	70,173	17.02
Iowa	181	4,111	1.0	80,288	19.53
Maryland	44	2,386	0.6	38,081	15.96
New Hampshire	93	2,328	0.6	37,714	16.20
All other states [1]	[1] 399	6,021	1.5	111,027	18.44

[1] Includes mills distributed as follows: Alabama, 16; Arkansas, 27; Connecticut, 58; Georgia, 11; Illinois, 48; Massachusetts, 93; Mississippi, 16; Missouri, 111; New Jersey, 16; Oklahoma, 1; and Texas, 2.

The best grades of basswood lumber bring good prices, and in consequence the average value of the entire product is fairly high, the average price at the mill for all grades in 1909 being $19.50 per thousand feet. The highest value, $24.38 per thousand feet, was reported from Indiana, and the lowest, $15.96 per thousand feet, from Maryland. The production of basswood lumber in the latter state is comparatively small, however, and the price received for it is no indication of the general market price for basswood.

ELM.

Elm is another hardwood in the production of which Wisconsin leads. Of the total cut of 347,456,000 feet in 1909, reported by 34 states, Wisconsin furnished 21.7 per cent. Michigan ranked second, with 16.8 per cent, and Indiana third, with 11.6 per cent of the total.

Although elms are very widely distributed throughout the eastern half of the United States, no large quantity of elm lumber was cut in any state other than the three above mentioned, which together supplied one-half of the total production.

The production of elm lumber is decreasing, the output in 1909 being only 76.1 per cent of that in 1899. The heaviest decreases have taken place in Michigan and Ohio. These two states produced 202,856,000 feet of elm lumber in 1899 and only 45.1 per cent as much in 1909. The production of elm lumber in Wisconsin has remained at practically the same level for the past 10 years.

TABLE 24.—*Lumber, lath, and shingles—Elm lumber—Number of active mills reporting and quantity and value of cut, by states: 1909.*

STATE.	Number of active mills reporting.	QUANTITY.		VALUE.	
		M feet b. m.	Per cent distribution.	Total.	Average per M feet.
United States	8,028	347,456	100.0	$6,088,098	$17.52
Wisconsin	680	75,472	21.7	1,319,251	17.48
Michigan	700	58,321	16.8	1,164,087	19.96
Indiana	914	40,364	11.6	783,869	19.42
Ohio	920	33,182	9.5	670,608	20.21
Missouri	810	27,913	8.0	423,719	15.18
New York	850	16,280	4.7	263,573	16.19
Minnesota	298	14,645	4.2	211,913	14.47
Arkansas	220	13,056	3.8	194,796	14.92
Illinois	436	12,102	3.5	195,810	16.18
Iowa	282	11,710	3.4	225,769	19.28
Tennessee	400	10,688	3.1	144,609	13.53
Kentucky	395	10,130	2.9	131,082	12.94
Mississippi	86	6,090	1.8	91,654	15.05
Pennsylvania	308	4,954	1.4	80,205	16.19
Oklahoma	88	2,140	0.6	27,948	13.06
Vermont	134	1,766	0.5	26,137	14.80
All other states [1]	[1] 507	8,643	2.5	133,068	15.40

[1] Includes mills distributed as follows: Alabama, 45; Connecticut, 38; Delaware, 1; Florida, 1; Georgia, 15; Kansas, 3; Louisiana, 28; Maine, 80; Maryland, 38; Massachusetts, 56; New Hampshire, 42; New Jersey, 17; North Carolina, 23; Rhode Island, 2; South Carolina, 5; Texas, 21; Virginia, 31; and West Virginia, 61.

The better grades of elm bring very good prices. The average for the entire cut in 1909 was $17.52 per thousand feet. The highest average value, $20.21 per thousand feet, was reported from Ohio, and the lowest, $12.94, from Kentucky.

CEDAR.

The term "cedar" as used commercially includes five or six botanical species whose combined ranges cover nearly the entire United States. The cedars are cut chiefly into posts, poles, and piling, but a considerable quantity of cedar lumber is also manufactured. The 346,008,000 feet cut in 1909 were produced by 1,320 mills located in 36 states.

Over one-half of the cedar lumber is sawed in the state of Washington, the species cut there being the western red cedar (*Thuja plicata*). The same species is cut in Idaho. In Oregon some lumber is sawed from the Port Orford cedar, and in California from the incense cedar. In the Lake states and Maine a small quantity of lumber is sawed from the eastern white cedar, or arbor vitæ, and in the South from the true red cedar (*Juniperus virginiana*).

Although the reported cut of cedar lumber in 1909 was 48.5 per cent greater than in 1899, it was not equal to that in 1907.

TABLE 25.—*Lumber, lath, and shingles—Cedar lumber—Number of active mills reporting and quantity and value of cut, by states: 1909.*

STATE.	Number of active mills reporting.	QUANTITY.		VALUE.	
		M feet b. m.	Per cent distribution.	Total.	Average per M feet.
United States	1,320	346,008	100.0	$6,901,948	$19.95
Washington	171	183,952	53.2	4,208,822	22.88
Idaho	29	28,644	8.3	264,384	9.23
Oregon	94	26,607	7.7	404,426	15.20
Michigan	102	17,647	5.1	195,352	11.07
Maine	103	15,140	4.4	246,933	16.31
Virginia	75	14,907	4.3	380,725	25.54
California	67	14,834	4.3	192,100	12.95
Tennessee	119	8,927	2.6	215,230	24.11
New Jersey	84	7,885	2.3	202,723	25.71
Wisconsin	66	6,257	1.8	104,867	16.76
North Carolina	89	5,665	1.6	124,290	21.94
Missouri	9	2,984	0.9	71,944	24.11
Alabama	31	2,869	0.8	76,602	26.70
Minnesota	34	1,945	0.6	23,807	12.24
All other states [1]	[1] 247	7,745	2.2	189,743	24.50

[1] Includes mills distributed as follows: Arkansas, 4; Connecticut, 18; Delaware, 3; Florida, 17; Georgia, 7; Illinois, 1; Indiana, 9; Iowa, 1; Kentucky, 54; Maryland, 19; Massachusetts, 32; Mississippi, 2; Montana, 2; New Hampshire, 3; Ohio, 2; Pennsylvania, 31; Rhode Island, 2; South Carolina, 9; Texas, 4; Utah, 1; Vermont, 15; and West Virginia, 11.

HICKORY.

Statistics of the production of hickory lumber do not adequately represent the total amount of this timber annually cut, since a great deal is manufactured directly into special stock for use in different industries. The hickories are widely distributed throughout the eastern half of the United States. Reports of hickory lumber production in 1909 were received from 7,796 mills located in 34 states.

Tennessee ranked first in the production of hickory lumber in 1909, with a product of a little more than one-sixth of the total. Arkansas produced about one-seventh, Kentucky one-eighth, and Missouri one-tenth of the total. The four states named together contributed more than one-half of the entire production.

There is a great demand for hickory lumber, and the available supply is limited. Consequently, the price in 1909 was the highest yet reported. The value ranged from $16.09 per thousand feet in Virginia to $39.24 in Louisiana.

TABLE 26.—*Lumber, lath, and shingles—Hickory lumber—Number of active mills reporting and quantity and value of cut, by states: 1909.*

STATE.	Number of active mills reporting.	QUANTITY.		VALUE.	
		M feet b.m.	Per cent distribution.	Total.	Average per M feet.
United States	7,796	333,929	100.0	$10,283,776	$30.80
Tennessee	655	58,477	17.5	2,171,251	37.13
Arkansas	384	45,133	13.5	1,392,353	30.85
Kentucky	673	41,656	12.5	1,259,677	30.24
Missouri	630	33,259	10.0	996,107	29.95
Indiana	858	23,513	7.0	716,441	30.47
Mississippi	142	21,967	6.6	736,993	33.55
Ohio	959	21,774	6.5	688,058	31.60
West Virginia	456	16,552	5.0	330,047	19.94
Pennsylvania	791	15,267	4.6	376,484	24.66
Illinois	432	11,095	3.3	317,872	28.65
Louisiana	43	7,704	2.3	302,305	39.24
Alabama	158	7,076	2.1	194,165	27.44
Virginia	287	5,528	1.6	88,946	16.09
Maryland	106	4,267	1.3	143,841	33.71
North Carolina	186	3,132	0.9	82,747	26.42
Oklahoma	60	2,572	0.8	53,292	20.72
Connecticut	177	2,442	0.7	58,779	24.07
Michigan	142	1,850	0.6	44,548	24.08
All other states[1]	[1] 657	10,665	3.2	329,870	30.93

[1] Includes mills distributed as follows: Delaware, 9; Florida, 18; Georgia, 74; Iowa, 105; Kansas, 6; Maine, 7; Massachusetts, 51; Minnesota, 5; New Hampshire, 10; New Jersey, 50; New York, 218; Rhode Island, 13; South Carolina, 24; Texas, 22; Vermont, 8; and Wisconsin, 37.

ASH.

The ash is one of the most widely distributed woods, and nowhere are large stands of this timber found. In 1909, 8,930 sawmills, located in 37 states, cut 291,209,000 feet of ash lumber, an average of only 32,600 feet per mill.

In recent years the Southern states have become prominent in the production of ash lumber, and in 1909 for the first time Arkansas took first rank, with 11.4 per cent of the total production. Wisconsin came second, with 9.5 per cent of the total, and was followed closely by Ohio, Michigan, and Indiana.

The reported production in 1909 was 8.2 per cent greater than in 1899, but the actual production in 1909 was probably less than in 1907. Ash is a useful and valuable timber, and, in consequence, the average price per thousand feet at the mill in 1909 was $24.44. The value ranged from $15.31 in Minnesota to $32.41 in Ohio.

TABLE 27.—*Lumber, lath, and shingles—Ash lumber—Number of active mills reporting and quantity and value of cut, by states: 1909.*

STATE.	Number of active mills reporting.	QUANTITY.		VALUE.	
		M feet b.m.	Per cent distribution.	Total.	Average per M feet.
United States	8,930	291,209	100.0	$7,116,089	$24.44
Arkansas	258	33,212	11.4	808,712	24.35
Wisconsin	514	27,631	9.5	503,161	18.21
Ohio	927	25,753	8.8	834,655	32.41
Michigan	608	24,865	8.5	511,224	20.56
Indiana	733	23,488	8.1	717,558	30.55
Tennessee	516	18,709	6.4	577,734	30.88
Mississippi	164	15,017	5.2	437,896	29.16
Kentucky	583	14,958	5.2	326,832	21.85
New York	963	12,747	4.4	293,181	23.00
Missouri	354	12,685	4.4	296,068	23.34
Louisiana	49	11,200	3.8	243,600	21.75
Pennsylvania	754	9,814	3.4	231,316	23.57
West Virginia	288	9,171	3.1	233,494	25.46
Virginia	181	5,590	1.9	102,241	18.29
Texas	36	5,348	1.8	124,929	23.36
Vermont	221	4,531	1.6	90,348	19.94
North Carolina	192	4,476	1.5	80,389	17.96
Alabama	97	3,387	1.2	84,675	25.00
Minnesota	207	3,326	1.1	50,921	15.31
Georgia	68	3,106	1.1	73,7[illegible]9	23.76
All other states[1]	[1] 1,217	22,195	7.6	493,356	22.23

[1] Includes mills distributed as follows: Connecticut, 154; Delaware, 3; Florida, 10; Illinois, 213; Iowa, 126; Kansas, 2; Maine, 184; Maryland, 68; Massachusetts, 157; New Hampshire, 138; New Jersey, 25; Oklahoma, 80; Oregon, 14; Rhode Island, 18; South Carolina, 20; South Dakota, 1; and Washington, 4.

COTTONWOOD.

The production of cottonwood lumber has been steadily decreasing for a number of years. The output of 265,600,000 feet in 1909 was 36 per cent less than the cut in 1899.

In 1909 Arkansas led in the production of cottonwood lumber, with a cut of slightly more than one-fifth of the total. Louisiana and Mississippi ranked second and third, with approximately equal amounts. These three states together produced more than one-half of the total output. No very large quantity of cottonwood lumber was sawed in any other state. The production in Arkansas in 1909 was less than one-half of that in 1899, and in Missouri less than one-quarter. The production in Mississippi, however, was 16.4 per cent more than in 1899.

The average value at the mill of all the cottonwood lumber sawed in 1909 was $18.05 per thousand feet. The state averages ranged from $22.07 in Tennessee to $8.54 in Idaho. Only a small quantity was cut in the latter state, however, and that for local use.

TABLE 28.—*Lumber, lath, and shingles—Cottonwood lumber—Number of active mills reporting and quantity and value of cut, by states: 1909.*

STATE.	Number of active mills reporting.	QUANTITY.		VALUE.	
		M feet b. m.	Per cent distribution.	Total.	Average per M feet.
United States	2,922	265,600	100.0	$4,794,424	$18.05
Arkansas	128	54,507	20.5	1,035,088	18.99
Louisiana	45	47,509	17.9	854,687	17.99
Mississippi	172	46,222	17.4	920,280	19.91
Missouri	509	17,987	6.8	326,834	18.17
Minnesota	192	16,668	6.3	256,020	15.36
Tennessee	59	12,380	4.7	273,227	22.07
Iowa	234	10,778	4.1	224,290	20.81
Oklahoma	106	9,585	3.6	133,615	13.94
Michigan	203	6,384	2.4	92,887	14.55
Idaho	9	5,446	2.1	46,509	8.54
Wisconsin	131	4,338	1.6	54,789	12.63
Indiana	272	4,143	1.6	74,284	17.93
Illinois	188	3,939	1.5	75,274	19.11
Texas	21	3,354	1.3	63,290	18.87
Ohio	202	2,944	1.1	64,709	21.98
Georgia	5	2,260	0.9	34,940	15.46
South Carolina	10	2,048	0.8	32,686	15.96
All other states [1]	[1] 436	15,108	5.7	231,015	15.29

[1] Includes mills distributed as follows: Alabama, 15; Colorado, 4; Connecticut, 28; Florida, 5; Kansas, 3; Kentucky, 65; Maine, 63; Massachusetts, 49; Montana, 13; Nebraska, 3; New Hampshire, 31; New Jersey, 1; North Carolina, 8; Oregon, 3; Pennsylvania, 16; Rhode Island, 3; South Dakota, 3; Utah, 15; Vermont, 67; Virginia, 11; Washington, 9; and West Virginia, 21.

LARCH.

The term "larch" is here used to designate the western larch, or tamarack, which is cut in Montana, Idaho, eastern Washington, and Oregon, as distinguished from the eastern tamarack, which is cut chiefly in the Lake states.

TABLE 29.—*Lumber, lath, and shingles—Larch lumber—Number of active mills reporting and quantity and value of cut, by states: 1909.*

STATE.	Number of active mills reporting.	QUANTITY.		VALUE.	
		M feet b. m.	Per cent distribution.	Total.	Average per M feet.
United States	230	264,022	100.0	$3,270,906	$12.39
Montana	60	104,130	39.4	1,416,168	13.60
Idaho	72	97,743	37.0	1,139,683	11.66
Washington	72	39,795	15.1	471,173	11.84
Oregon	26	22,354	8.5	243,882	10.91

The production of larch lumber in 1909 amounted to 264,022,000 feet, of which over three-fourths was reported from Montana and Idaho. A production of 22,354,000 feet was reported from Oregon, but it is probable that these figures include considerable noble fir, since this species is in Oregon known as larch, and is thus advertised by some Oregon lumber manufacturers.

The production of larch lumber in 1909 was more than six times as great as in 1899. Nevertheless, larch lumber has not yet come into general use, and owing to its greater weight, can not profitably go so far to market as its associated species, Douglas fir and western pine. In 1909 the average value at the mill of larch lumber was $12.39 per thousand feet.

TAMARACK.

Only within the last few years has any considerable quantity of tamarack lumber been sawed. It is cut almost entirely in the Lake states, Minnesota supplying approximately two-fifths of the total. The prices correspond very closely with those reported for hemlock. Tamarack is frequently cut into large timbers for use where considerable strength and durability is demanded.

TABLE **30.**—*Lumber, lath, and shingles—Tamarack lumber—Number of active mills reporting and quantity and value of cut, by states: 1909.*

STATE.	Number of active mills reporting.	QUANTITY.		VALUE.	
		M feet b. m.	Per cent distribution.	Total.	Average per M feet.
United States	1,148	157,192	100.0	$2,071,996	$13.18
Minnesota	322	63,555	40.4	884,050	13.91
Wisconsin	362	46,919	29.8	580,857	12.38
Michigan	407	44,956	28.6	579,932	12.90
All other states [1]	[1] 57	1,762	1.1	27,157	15.41

[1] Includes mills distributed as follows: Illinois, 2; Iowa, 1; Maine, 14; Massachusetts, 9; New Hampshire, 11; Ohio, 2; Pennsylvania, 11; and Vermont, 7.

BALSAM FIR.

Within the last few years considerable balsam fir lumber has been sawed. The reported cut of 108,702,000 feet in 1909 was by far the largest yet recorded. Nearly one-half of the total was produced in Maine. New Hampshire, Minnesota, and Vermont, which ranked next in the order named, each produced about one-tenth of the total output. In 1909 the average value at the mill of balsam fir lumber was $13.99 per thousand feet, and no great variation from these figures was shown in any state.

TABLE 31.—*Lumber, lath, and shingles—Balsam fir lumber—Number of active mills reporting and quantity and value of cut, by states: 1909.*

STATE.	Number of active mills reporting.	QUANTITY.		VALUE.	
		M feet b. m.	Per cent distribution.	Total.	Average per M feet.
United States	1,415	108,702	100.0	$1,520,347	$13.99
Maine	384	50,491	46.4	708,389	14.03
New Hampshire	74	12,231	11.3	180,285	14.74
Minnesota	132	11,140	10.2	155,180	13.93
Vermont	153	10,059	9.3	142,134	14.13
Michigan	105	9,645	8.9	136,477	14.15
All other states [1]	[1] 567	15,136	13.9	197,882	13.07

[1] Includes mills distributed as follows: Colorado, 7; Connecticut, 1; Idaho, 2; Massachusetts, 14; New York, 458; North Carolina, 3; Pennsylvania, 3; Tennessee, 2; and West Virginia, 77.

SUGAR PINE.

The commercial range of this great giant of the white pine family is confined almost entirely to the region of the Sierras in California, where 91.4 per cent of the total cut of 97,191,000 feet was produced in 1909. The output in the year named was 81.5 per cent greater than in 1899, but slightly less than in 1908, and decidedly less than in 1906 and 1907. The average value of the product per thousand feet in 1909 was $0.36 greater than in 1908, but $1.70 less than in 1907.

TABLE 32.—*Lumber, lath, and shingles—Sugar pine lumber—Number of active mills reporting and quantity and value of cut, by states: 1909.*

STATE.	Number of active mills reporting.	QUANTITY.		VALUE.	
		M feet b. m.	Per cent distribution.	Total.	Average per M feet.
United States	97	97,191	100.0	$1,762,622	$18.14
California	71	88,822	91.4	1,634,325	18.40
Oregon	26	8,369	8.6	128,297	15.33

TUPELO.

The term "tupelo" is used to designate the lumber of the several species of the genus *Nyssa*, and especially *Nyssa sylvatica*, which is associated with cypress in the swamps of Louisiana.

TABLE 33.—*Lumber, lath, and shingles—Tupelo lumber—Number of active mills reporting and quantity and value of cut, by states: 1909.*

STATE.	Number of active mills reporting.	QUANTITY.		VALUE.	
		M feet b. m.	Per cent distribution.	Total.	Average per M feet.
United States	413	96,676	100.0	$1,147,401	$11.87
Louisiana	41	24,703	25.6	306,070	12.39
Virginia	26	20,942	21.7	215,493	10.29
Alabama	31	13,074	13.5	166,432	12.73
North Carolina	32	12,219	12.6	132,210	10.82
Mississippi	39	6,146	6.4	83,770	13.63
Arkansas	56	6,084	6.3	83,533	13.73
Missouri	39	4,351	4.5	52,473	12.06
Tennessee	34	3,180	3.3	35,870	11.28
South Carolina	14	3,165	3.3	36,239	11.45
All other states [1]	[1] 101	2,812	2.9	35,311	12.56

[1] Includes mills distributed as follows: Connecticut, 4; Florida, 3; Georgia, 11; Illinois, 24; Indiana, 15; Kentucky, 18; Maryland, 4; New Jersey, 1; Oklahoma, 3; Pennsylvania, 4; Texas, 1; and West Virginia, 13.

Only very recently has tupelo lumber become a well-known commercial product, and the cut of 96,676,000 feet in 1909 was nearly twice as great as the cut in 1906, the first year in which statistics of tupelo were secured. In 1909 Louisiana supplied slightly more than one-fourth of the total amount, Virginia about one-fifth, and Alabama and North Carolina approximately one-eighth each. These four states, combined, supplied nearly three-fourths of the total output. The average value per thousand feet was $11.87, the average ranging for individual states from $10.29 in Virginia to $13.73 in Arkansas.

WHITE FIR.

The term "white fir" is used as a designation for two or three true firs of the Rocky Mountains and the Pacific coast. These are chiefly *Abies concolor* and *Abies nobilis*, and the lumber produced from them in no way resembles that of Douglas fir (*Pseudotsuga taxifolia*), which, botanically, is not a fir at all.

California produced over one-half of the white fir lumber reported in 1909, and Idaho slightly more than one-quarter. The average value per thousand feet at the mill was $13.10, the average for individual states ranging from $10.20 in Oregon to $14.01 in California.

TABLE 34.—*Lumber, lath, and shingles—White-fir lumber—Number of active mills reporting and quantity and value of cut, by states: 1909.*

STATE.	Number of active mills reporting.	QUANTITY.		VALUE.	
		M feet b. m.	Per cent distribution.	Total.	Average per M feet.
United States	290	89,318	100.0	$1,170,411	$13.10
California	72	48,306	54.1	676,767	14.01
Idaho	57	22,795	25.5	258,267	11.33
Washington	42	7,491	8.4	101,803	13.59
Oregon	75	5,586	6.3	56,977	10.20
Montana	15	2,647	3.0	33,352	12.60
All other states [1]	[1] 29	2,493	2.8	43,245	17.35

[1] Includes mills distributed as follows: Arizona, 2; Colorado, 6; Nevada, 1; New Mexico, 3; and Utah, 17.

SYCAMORE.

Sycamore grows scatteringly over a wide range, and nowhere are large stands found. In 1909, 2,964 mills, situated in 25 states, produced 56,511,000 feet of sycamore lumber, an average of 19,000 feet per mill. Indiana has always led in the production of this lumber, and in 1909 supplied nearly one-fifth of the total product; Missouri was a close second, and Kentucky ranked third. Arkansas, Ohio, and Illinois produced practically equal amounts. The combined production in these six states amounted to more than three-fourths of the total. The cut of sycamore in 1909 was approximately twice as great as the production in 1899. The average value at the mill in 1909 was $14.77 per thousand feet, ranging for the various states from $10.91 in Virginia to $18.08 in Ohio.

TABLE 35.—*Lumber, lath, and shingles—Sycamore lumber—Number of active mills reporting and quantity and value of cut, by states: 1909.*

STATE.	Number of active mills reporting.	QUANTITY.		VALUE.	
		M feet b. m.	Per cent distribution.	Total.	Average per M feet.
United States	2,964	56,511	100.0	$834,612	$14.77
Indiana	633	11,003	19.5	189,252	17.20
Missouri	501	10,526	18.6	138,101	13.12
Kentucky	338	6,760	12.0	87,001	12.87
Arkansas	83	5,406	9.6	82,550	15.27
Ohio	357	5,243	9.3	94,793	18.08
Illinois	279	5,073	9.0	75,791	14.94
Tennessee	201	3,512	6.2	46,183	13.15
Oklahoma	80	2,353	4.2	29,460	12.52
West Virginia	95	1,533	2.7	20,665	13.48
Virginia	86	980	1.7	10,692	10.91
Maryland	36	904	1.6	10,550	11.67
All other states [1]	[1] 275	3,218	5.7	49,574	15.41

[1] Includes mills distributed as follows: Alabama, 22; Connecticut, 3; Georgia, 10; Iowa, 51; Kansas, 3; Louisiana, 6; Massachusetts, 2; Michigan, 72; Mississippi, 29; New Jersey, 4; North Carolina, 27; Pennsylvania, 40; South Carolina, 2; and Texas, 4.

WALNUT.

Walnut is widely distributed throughout the eastern half of the United States, and in 1909, 3,518 mills, situated in 30 states, sawed 46,108,000 feet of walnut lumber.

TABLE 36.—*Lumber, lath, and shingles—Walnut lumber—Number of active mills reporting and quantity and value of cut, by states: 1909.*

STATE.	Number of active mills reporting.	QUANTITY.		VALUE.	
		M feet b. m.	Per cent distribution.	Total.	Average per M feet.
United States	3,518	46,108	100.0	$1,972,835	$42.79
Ohio	387	8,580	18.6	474,731	55.33
Indiana	544	7,669	16.6	327,160	42.66
Illinois	145	5,051	11.0	275,431	54.53
Kentucky	419	4,907	10.6	176,358	35.94
Missouri	384	4,314	9.4	182,870	42.39
Tennessee	387	4,068	8.8	152,021	37.37
Virginia	210	2,308	5.0	77,618	33.63
West Virginia	216	1,968	4.3	59,001	29.98
Pennsylvania	258	1,762	3.8	65,088	36.94
Kansas	6	1,114	2.4	33,420	30.00
All other states[1]	[1] 562	4,367	9.5	149,137	34.15

[1] Includes mills distributed as follows: Alabama, 51; Arkansas, 56; Connecticut, 18; Delaware, 3; Georgia, 12; Iowa, 114; Maryland, 51; Massachusetts, 26; Michigan, 46; Minnesota, 8; Mississippi, 4; New Hampshire, 3; New Jersey, 18; North Carolina, 58; Oklahoma, 42; Rhode Island, 8; South Carolina, 10; Texas, 7; Vermont, 1; and Wisconsin, 26.

For many years Ohio and Indiana have stood foremost in the production of walnut lumber, and the lead has been taken by each state alternately. In 1909 Ohio ranked first, with 18.6 per cent of the total cut, and Indiana second, with 16.6 per cent. The total production of walnut lumber has been remarkably steady for many years, and the cut in 1909 varied little even from that of 1899.

Walnut is the highest-priced native lumber which is sawed to any extent in the United States. The average value at the mill in 1909 was $42.79 per thousand feet, ranging for the various states from $29.98 in West Virginia to $55.33 in Ohio.

CHERRY.

Next to walnut, cherry is the highest-priced lumber produced in the United States, but the production is approximately only one-half as great as of walnut lumber, since cherry timber is very scarce. This is indicated by the fact that the 24,594,000 feet of cherry lumber sawed in 1909 were produced by 2,202 mills situated in 29 states, an average of only 11,200 feet per mill.

West Virginia leads in the production of cherry lumber, and in 1909 supplied slightly more than one-fifth of the total product. Pennsylvania ranked second, and New York third. These three states supplied a little more than one-half of the total product. The average value at the mill was $31.30 per thousand feet, the highest value, $41.35 per thousand feet, being reported from Kentucky, and the lowest, $23.62 per thousand feet, from the group of states included under the head "All other states."

TABLE 37.—*Lumber, lath, and shingles—Cherry lumber—Number of active mills reporting and quantity and value of cut, by states: 1909.*

STATE.	Number of active mills reporting.	QUANTITY.		VALUE.	
		M feet b. m.	Per cent distribution.	Total.	Average per M feet.
United States	2,202	24,594	100.0	$769,894	$31.30
West Virginia	115	5,058	20.6	182,796	36.14
Pennsylvania	366	4,324	17.6	122,326	28.29
New York	355	3,327	13.5	116,445	35.00
Ohio	264	2,105	8.6	69,212	32.88
Indiana	259	1,969	8.0	65,824	33.43
Michigan	140	1,587	6.5	44,119	27.80
Tennessee	88	874	3.6	27,793	31.80
Maryland	27	872	3.5	21,565	24.73
Kentucky	103	792	3.2	32,749	41.35
All other states[1]	[1] 485	3,686	15.0	87,065	23.62

[1] Includes mills distributed as follows: Alabama, 14; Arkansas, 27; Connecticut, 21; Georgia, 2; Illinois, 49; Iowa, 49; Maine, 2; Massachusetts, 68; Minnesota, 3; Mississippi, 3; Missouri, 82; New Hampshire, 25; New Jersey, 9; North Carolina, 44; Oklahoma, 3; Rhode Island, 1; South Carolina, 2; Vermont, 34; Virginia, 21; and Wisconsin, 26.

LODGEPOLE PINE.

The term "lodgepole pine" is used to designate the common Rocky Mountain timber which is known to botanists as *Pinus contorta.* Although there are heavy stands of this timber, it does not reach a large size, and its chief use is for mining timbers, posts, and crossties. In the canvass of 1909 detailed reports upon the production of lodgepole-pine lumber were secured for the first time.

TABLE 38.—*Lumber, lath, and shingles—Lodgepole-pine lumber—Number of active mills reporting and quantity and value of cut, by states: 1909.*

STATE.	Number of active mills reporting.	QUANTITY.		VALUE.	
		M feet b. m.	Per cent distribution.	Total.	Average per M feet.
United States	96	23,733	100.0	$385,761	$16.25
Wyoming	16	11,886	50.1	190,533	16.03
Colorado	39	6,730	28.4	96,172	14.29
Montana	20	2,567	10.8	56,115	21.86
Idaho	14	1,228	5.2	25,677	20.91
Utah	5	845	3.6	12,971	15.35
All other states[1]	[1] 2	477	2.0	4,293	9.00

[1] Includes mills distributed as follows: California, 1, and Oregon, 1.

Of the 23,733,000 feet of lodgepole pine sawed in 1909, Wyoming reported one-half and Colorado more than one-fourth. The balance was produced chiefly in Montana and Idaho. The average value reported was $16.25 per thousand feet. The highest average value reported for any state in which considerable quantities of this lumber were cut was $21.86 per thousand feet in Montana, and the lowest average $14.29 per thousand feet in Colorado.

MINOR SPECIES.

Included in the reports of lumber production in 1909 were small quantities of 20 native species of lumber and 2 foreign species, the cut of none of which was sufficient to warrant a showing by states. Statistics of these species are given in Table 39.

TABLE **39.**—*Lumber, lath, and shingles—Minor species of lumber—Quantity and value of product, and principal states in which cut: 1909.*

KIND.	Quantity (M feet b. m.).	VALUE.		Principal states in which cut.
		Total.	Average per M feet.	
Total	37,557	$2,109,794	$56.18	
Mahogany	14,374	1,578,328	109.80	Kentucky, Louisiana, and Ohio.
Buckeye	11,195	156,672	13.99	Tennessee, Kentucky, West Virginia, and North Carolina.
Locust	3,335	91,469	27.43	Virginia and Indiana.
Persimmon	2,285	99,823	43.69	Tennessee, Mississippi, and Arkansas.
Willow	1,242	18,276	14.71	Mississippi and Iowa.
Butternut	1,206	25,774	21.37	Texas, Indiana, and Wisconsin.
Dogwood	909	72,020	79.23	Tennessee and North Carolina.
Cucumber	825	21,244	25.75	West Virginia and Virginia.
Silver bell	660	12,045	18.25	Tennessee.
Alder	350	4,400	12.57	Washington and Oregon.
Hackberry	346	4,994	14.43	Illinois, Missouri, Indiana, Louisiana, and Arkansas.
Bois d'arc	340	6,800	20.00	Oklahoma and Kansas.
Apple	180	8,428	46.82	Pennsylvania and New Jersey.
Magnolia	138	2,352	17.04	Louisiana.
Shittim	42	798	19.00	North Carolina.
Teak	40	4,400	110.00	Massachusetts.
Holly	37	740	20.00	Maryland.
Laurel	26	650	25.00	California.
Sassafras	24	529	22.04	Tennessee.
Coffee wood	1	20	20.00	Iowa.
Myrtle	1	12	12.00	Oregon.
Mulberry	1	20	20.00	Arkansas.

The total quantity of these minor species sawed was 37,557,000 feet. The most important species included was imported mahogany, of which 14,374,000 feet, sawed chiefly in Kentucky, Louisiana, and Ohio, were reported, while the least important were coffee wood, myrtle, and mulberry, for each of which a cut of 1,000 feet was reported. The figures given for mahogany by no means represent the total importation of this valuable wood, since much of it is consumed in veneer and other establishments, reports of which are not included in this bulletin. Other woods in the table are used largely for special purposes, and not sawed into lumber to any extent. This is particularly true of locust, persimmon, and dogwood. Cucumber is included with yellow poplar by some mills, so that the figures given in the table are under the actual cut of this species.

LEADING STATES AND SPECIES.

The following tabular statement shows the states which in 1909 led in the production of lumber from each of the 31 principal species, statistics of the cut of which have been presented in the tables preceding.

STATE.	Kind or kinds of wood in the cut of which the specified state ranked first.
Arkansas	Red gum, cottonwood, and ash.
California	Redwood, sugar pine, white fir, and western pine.
Indiana	Sycamore.
Louisiana	Yellow pine, cypress, and tupelo.
Maine	Spruce and balsam fir.
Michigan	Maple and beech.
Minnesota	White pine and tamarack.
Montana	Larch.
Ohio	Walnut.
Tennessee	Oak, yellow poplar, and hickory.
Washington	Douglas fir and cedar.
West Virginia	Chestnut and cherry.
Wisconsin	Hemlock, birch, basswood, and elm.
Wyoming	Lodgepole pine.

In 1909, 19 states produced more than one billion feet of lumber each, and in the following tabular statement they are shown in the order of output, together with the principal species cut in each state, and the percentage that the cut of this species formed of the total lumber production of the state. Yellow pine is the timber chiefly cut in nine of these states, and hemlock in three. Douglas fir and oak each lead in two states, and white pine, redwood, and spruce each in one state.

STATE.	Principal kind of wood cut.	Per cent that cut of specified kind of wood forms of total cut of state.
Washington	Douglas fir	79.2
Louisiana	Yellow pine	77.1
Mississippi	Yellow pine	82.2
North Carolina	Yellow pine	72.3
Arkansas	Yellow pine	62.2
Virginia	Yellow pine	58.1
Texas	Yellow pine	96.2
Wisconsin	Hemlock	35.0
Oregon	Douglas fir	83.3
Michigan	Hemlock	32.5
Alabama	Yellow pine	89.1
Minnesota	White pine	83.8
West Virginia	Oak	31.0
Pennsylvania	Hemlock	47.0
Georgia	Yellow pine	89.0
Tennessee	Oak	44.7
Florida	Yellow pine	92.4
California	Redwood	45.6
Maine	Spruce	37.9

CLASSIFICATION OF SAWMILLS ACCORDING TO OUTPUT.

In Table 40 the sawmills of the country are classified according to the quantity of lumber sawed in 1909.

TABLE 40.—*Lumber, lath, and shingles—Sawmills, classified*

	STATE.	AGGREGATE.		SAWING—	
				(Group 1.) Less than 50 M feet.	
		Number of mills.	Cut (M feet b. m.).	Number of mills.	Cut (M feet b. m.).
1	United States	46,584	44,509,761	4,543	124,966
2	Alabama	2,125	1,691,001	179	4,957
3	Arizona	19	62,731	5	170
4	Arkansas	1,958	2,111,300	162	4,875
5	California	273	1,143,507	19	467
6	Colorado	250	141,710	32	911
7	Connecticut	422	168,371	77	1,378
8	Delaware	151	55,440	10	251
9	Florida	471	1,201,734	11	202
10	Georgia	1,991	1,342,249	130	3,286
11	Idaho	290	645,800	25	625
12	Illinois	827	170,181	158	4,423
13	Indiana	1,599	556,418	195	5,540
14	Iowa	350	132,021	55	1,428
15	Kentucky	2,351	860,712	274	8,093
16	Louisiana	641	3,551,918	10	281
17	Maine	1,181	1,111,565	63	1,845
18	Maryland	721	267,939	71	2,150
19	Massachusetts	628	361,200	49	1,412
20	Michigan	1,263	1,889,724	89	2,685
21	Minnesota	726	1,561,508	67	1,993
22	Mississippi	1,761	2,572,669	134	4,024
23	Missouri	2,045	660,159	369	9,905
24	Montana	179	308,582	21	822
25	New Hampshire	682	649,606	31	823
26	New Jersey	269	61,620	55	1,462
27	New Mexico	80	91,987	5	170
28	New York	2,236	681,440	460	11,840
29	North Carolina	3,249	2,177,715	210	5,807
30	Ohio	1,628	542,904	153	4,152
31	Oklahoma	370	225,730	34	1,002
32	Oregon	645	1,898,995	31	767
33	Pennsylvania	2,974	1,462,771	433	10,957
34	Rhode Island	57	25,489	8	188
35	South Carolina	998	897,660	60	1,801
36	South Dakota	54	31,057	6	103
37	Tennessee	2,631	1,223,849	224	6,579
38	Texas	663	2,099,130	17	472
39	Utah	88	12,638	19	522
40	Vermont	711	351,571	42	1,147
41	Virginia	3,485	2,101,716	305	8,802
42	Washington	714	3,862,916	13	357
43	West Virginia	1,524	1,472,942	150	3,965
44	Wisconsin	1,205	2,025,038	69	2,060
45	Wyoming	88	28,602	11	237
46	All other states[7]	11	15,946	2	....

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[1] Includes the cut of 1 mill in group 3.
[2] Includes the cut of 1 mill in group 6.
[3] Includes the cut of 2 mills in group 5.
[4] Includes the cut of 1 mill in group 4.
[6] Includes the cut of 1 mill in group 7 and 1 mill in group 8.

according to quantity of lumber cut, by states: 1909.

SAWING—continued.								
(Group 2.) 50 M feet but less than 500 M feet.		(Group 3.) 500 M feet but less than 1,000 M feet.		(Group 4.) 1,000 M feet but less than 2,500 M feet.		(Group 5.) 2,500 M feet but less than 5,000 M feet.		
Number of mills.	Cut (M feet b. m.).	Number of mills.	Cut (M feet b. m.).	Number of mills.	Cut (M feet b. m.).	Number of mills.	Cut (M feet b. m.).	
28,459	5,582,738	6,468	4,315,636	4,198	5,996,043	1,245	4,072,549	1
1,313	245,392	317	207,761	211	309,862	45	147,409	2
8	1,405	1	....	....	....	2	[1] 8,513	3
1,092	221,068	327	225,428	237	341,949	64	208,399	4
101	20,174	43	27,862	35	56,890	19	67,889	5
146	27,494	42	28,225	22	27,777	4	11,497	6
228	41,730	65	43,459	46	62,812	5	[2] 18,992	7
109	23,432	21	13,710	9	[3] 18,047	2	....	8
183	43,568	81	54,809	82	124,702	39	142,333	9
1,241	238,906	312	203,043	215	297,384	43	140,935	10
143	30,424	50	33,198	35	47,628	11	34,116	11
610	97,339	39	24,997	15	23,661	4	[2] 19,761	12
1,121	207,319	173	118,890	80	113,355	26	84,590	13
277	40,356	12	8,577	1	....	2	[4] 8,984	14
1,681	326,150	258	170,330	92	125,225	30	104,483	15
163	39,925	103	72,634	131	212,328	67	233,075	16
625	141,220	206	140,961	187	274,386	63	205,134	17
516	102,436	99	65,680	28	32,483	2	....	18
370	77,755	88	61,595	108	156,462	11	[5] 63,976	19
762	166,971	158	108,511	97	144,957	48	177,083	20
528	96,902	62	39,695	18	23,312	6	21,256	21
914	185,040	234	160,233	271	403,314	97	329,200	22
1,402	227,992	157	104,037	90	130,088	13	38,369	23
92	16,832	20	12,943	22	31,460	11	37,891	24
296	67,231	150	105,377	153	227,939	41	107,631	25
175	31,025	35	22,033	3	[6] 7,100	1	....	26
40	8,287	17	11,291	10	12,620	3	8,028	27
1,481	256,067	195	130,100	73	107,162	17	57,994	28
1,937	395,092	571	369,527	350	462,780	101	268,929	29
1,193	242,893	190	121,714	80	99,634	8	[2] 34,927	30
226	42,048	51	31,305	40	55,951	12	32,334	31
269	56,593	119	77,212	101	141,445	48	162,650	32
2,065	403,886	321	221,433	112	145,460	9	27,622	33
28	5,137	11	7,824	10	12,340	....	....	34
608	108,509	142	89,872	111	165,051	45	136,535	35
33	6,050	11	7,846	1	....	1	....	36
1,803	357,448	388	256,396	150	203,029	34	120,885	37
222	47,698	120	80,290	155	231,347	62	213,549	38
65	9,675	4	2,441	....	....	....	....	39
432	102,156	148	98,212	77	106,175	9	26,198	40
2,059	415,583	600	399,803	415	560,722	57	156,916	41
186	43,382	100	67,935	110	165,167	102	357,715	42
930	199,337	232	153,485	115	166,153	34	122,618	43
713	154,276	190	130,764	97	169,292	43	152,113	44
68	9,935	3	2,052	3	5,400	3	10,978	45
5	[8] 630	2	[9] 15,316	....	....	1	....	46

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[6] Includes the cut of 1 mill in group 5.
[7] Includes Kansas, Nebraska, and Nevada.
[8] Includes the cut of 2 mills in group 1.
[9] Includes the cut of 1 mill in group 5 and 1 mill in group 7.

TABLE 40.—*Lumber, lath, and shingles—Sawmills, classified*

	STATE.	SAWING—continued.			
		(Group 6.) 5,000 M feet but less than 10,000 M feet.		(Group 7.) 10,000 M feet but less than 15,000 M feet.	
		Number of mills.	Cut (M feet b. m.).	Number of mills.	Cut (M feet b. m.).
1	United States	783	5,291,606	338	4,078,988
2	Alabama	27	179,839	15	177,983
3	Arizona	1			
4	Arkansas	32	228,523	16	200,763
5	California	23	159,637	11	146,293
6	Colorado	2	[4] 45,806	1	
7	Connecticut	1			
8	Delaware				
9	Florida	40	283,603	21	245,216
10	Georgia	32	201,482	12	144,497
11	Idaho	13	86,244	4	[6] 90,555
12	Illinois	1			
13	Indiana	3	[7] 26,724	1	
14	Iowa				
15	Kentucky	13	87,764	2	[8] 38,667
16	Louisiana	58	407,997	37	445,897
17	Maine	27	194,174	6	69,985
18	Maryland	2	[9] 22,197	2	[8] 42,993
19	Massachusetts			1	
20	Michigan	65	476,893	22	271,123
21	Minnesota	6	39,914	8	98,432
22	Mississippi	54	377,563	26	303,734
23	Missouri	10	[7] 81,431	1	
24	Montana	5	31,667	3	[6] 82,336
25	New Hampshire	8	51,615		
26	New Jersey				
27	New Mexico	4	[5] 51,591		
28	New York	4	29,875	3	36,708
29	North Carolina	54	303,476	16	175,726
30	Ohio	1		3	39,584
31	Oklahoma	5	[4] 63,090	1	
32	Oregon	30	208,312	11	132,133
33	Pennsylvania	12	78,729	8	100,034
34	Rhode Island				
35	South Carolina	20	131,510	4	[6] 92,409
36	South Dakota	2	[10] 17,058		
37	Tennessee	23	144,816	6	77,539
38	Texas	26	180,184	17	211,276
39	Utah				
40	Vermont	3	17,683		
41	Virginia	21	124,831	12	145,735
42	Washington	90	600,963	35	411,424
43	West Virginia	33	243,777	13	160,745
44	Wisconsin	32	227,408	19	227,601
45	Wyoming				
46	All other states [11]			1	

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[1] Includes the cut of 1 mill in group 10.

[2] Includes the cut of 1 mill in group 6.

[3] Includes the cut of 2 mills in group 10.

[4] Includes the cut of 1 mill in group 7 and 1 mill in group 8.

[5] Includes the cut of 1 mill in group 9.

[6] Includes the cut of 2 mills in group 8.

according to quantity of lumber cut, by states: 1909—Continued.

SAWING—continued.						
(Group 8.) 15,000 M feet but less than 25,000 M feet.		(Group 9.) 25,000 M feet but less than 50,000 M feet.		(Group 10.) 50,000 M feet and over.		
Number of mills.	Cut (M feet b. m.).	Number of mills.	Cut (M feet b. m.).	Number of mills.	Cut (M feet b. m.).	
329	6,308,819	185	6,238,229	36	2,500,187	1
13	245,216	4	[1] 172,582	1	....	2
2	[2] 52,643	....	....	....	....	3
16	303,202	12	377,093	....	....	4
12	251,811	8	[8] 412,484	2	....	5
1	....	....	....	....	....	6
....	....	....	....	....	....	7
....	....	....	....	....	....	8
10	177,579	4	129,722	....	....	9
5	[5] 112,716	1	....	....	....	10
2	....	6	[1] 323,010	1	....	11
....	....	....	....	....	....	12
....	....	....	....	....	....	13
2	[5] 72,676	1	....	....	....	14
1	....	....	....	....	....	15
38	766,609	30	1,043,753	4	329,419	16
3	[5] 83,860	1	....	....	....	17
1	....	....	....	....	....	18
1	....	....	....	....	....	19
16	318,116	5	[1] 223,385	1	....	20
6	118,551	20	797,704	5	323,749	21
20	362,660	8	256,355	3	190,546	22
2	[5] 68,337	1	....	....	....	23
2	....	3	94,631	....	....	24
1	....	2	[8] 88,990	....	....	25
....	....	....	....	....	....	26
....	....	1	....	....	....	27
3	51,694	....	....	....	....	28
10	196,378	....	....	....	....	29
....	....	....	....	....	....	30
1	....	....	....	....	....	31
23	420,270	8	293,117	5	406,496	32
7	139,856	4	140,739	3	194,055	33
....	....	....	....	....	....	34
2	....	6	171,973	....	....	35
....	....	....	....	....	....	36
3	57,157	....	....	....	....	37
27	511,017	15	[3] 623,297	2	....	38
....	....	....	....	....	....	39
....	....	....	....	....	....	40
16	289,324	....	....	....	....	41
41	771,685	29	972,370	8	471,918	42
13	260,893	3	[1] 161,969	1	....	43
29	549,051	13	412,473	....	....	44
....	....	....	....	....	....	45
....	....	....	....	....	....	46

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[7] Includes the cut of 1 mill in group 7.
[8] Includes the cut of 1 mill in group 8.
[9] Includes the cut of 2 mills in group 5.
[10] Includes the cut of 1 mill in group 4 and 1 mill in group 5.
[11] Includes Kansas, Nebraska, and Nevada.

The number of small mills, or those which sawed under 500,000 feet, was 33,002. Of all the states, Pennsylvania had considerably the largest proportion of sawmills of this class, 2,498, or 84 per cent of the total number in the state. In Virginia 2,364 mills, or 67.8 per cent of the total in the state were of this class, and in North Carolina, 2,147, or 66.1 per cent of the total in the state.

Of the medium sized mills, or those which sawed from 5,000,000 to 10,000,000 feet, Washington reported 90, or 12.6 per cent of the total number of mills in the state; Michigan, 65, or 5.1 per cent of the total in the state, and Louisiana, 58, or 9 per cent of the total in the state.

Of the large mills, or those which sawed 10,000,000 or more feet of lumber each, Washington reported 113, or 15.8 per cent of the total in the state; Louisiana, 109, or 17 per cent of the total in the state; and Wisconsin, 61, or 5.1 per cent of the total in the state.

The extent to which the product of the different groups of mills shown in Table 40 supplied the country's demands for lumber in 1909 is brought out in the following tabular statement:

GROUP.	CUT.	
	M feet b. m.	Per cent distribution.
All classes	44,509,761	100.0
Under 50 M feet	124,966	0.3
50 M but less than 500 M feet	5,582,738	12.5
500 M but less than 1,000 M feet	4,315,636	9.7
1,000 M but less than 2,500 M feet	5,996,043	13.5
2,500 M but less than 5,000 M feet	4,072,549	9.1
5,000 M but less than 10,000 M feet	5,291,606	11.9
10,000 M but less than 15,000 M feet	4,078,988	9.2
15,000 M but less than 25,000 M feet	6,308,819	14.2
25,000 M but less than 50,000 M feet	6,238,229	14.0
50,000 M feet and over	2,500,187	5.6

While there were in 1909, 4,543 sawmills which cut less than 50,000 feet each, their total product amounted to but three-tenths of 1 per cent of the entire lumber production of the country. The 28,459 mills the product of which ranged from 50,000 to 500,000 feet each produced one-eighth of the total supply. These two groups are made up of the mills whose product is chiefly used locally. As already indicated, the mills whose production was 10,000,000 feet or more may be considered preeminently the large sawmills of the country. In 1909 there were only 888 mills in this class. While these mills constituted less than 2 per cent of the total number of mills in the country, their cut amounted to 43 per cent of the total cut. Further, the 550 mills whose cut was 15,000,000 feet or more in 1909 produced 15,047,235,000 feet of lumber. In other words, 1.2 per cent of the total number of sawmills cut one-third of the total product. This shows strikingly the extent to which a comparatively few big mills meet the general demand for lumber in the United States.

The census of 1899 also made a classification of sawmills according to the quantity of lumber sawed, except that mills which cut less than 50,000 feet were omitted. If mills of this class are omitted from the 1909 figures, the following comparison of the number of mills of each class at the two periods is obtained:

OUTPUT.	SAWMILLS.			
	Number.		Per cent distribution.	
	1909	1899	1909	1899
All classes	42,041	32,136	100.0	100.0
50 M feet but less than 500 M feet	28,459	20,837	67.7	64.8
500 M feet but less than 1,000 M feet	6,468	5,179	15.4	16.1
1,000 M feet but less than 5,000 M feet	5,443	4,827	12.9	15.0
5,000 M feet but less than 10,000 M feet	783	607	1.9	1.9
10,000 M feet but less than 50,000 M feet	852	655	2.0	2.0
50,000 M feet and over	36	31	0.1	0.1

In 1909, as compared with 1899, an apparent increase is shown in the proportion of mills which produced less than 500,000 feet each. This increase, however, is due probably rather to the greater thoroughness of the canvass for 1909 than to any considerable increase in the actual number of mills of this capacity. On the other hand, there were decreases in the proportions represented by mills of the next two classes. The proportions represented by the three remaining classes, which comprise all of the large mills, were practically the same at the two periods.

SHINGLES.

Statistics of shingle production in 1909 and 1908 are given in Table 41.

TABLE **41.**—*Lumber, lath, and shingles—Shingles—Quantity and value of production, by species: 1909 and 1908.*

KIND OF WOOD.	1909				1908			
	Quantity.		Value.		Quantity.		Value.	
	Thousands.	Per cent distribution.	Total.	Average per thousand.	Thousands.	Per cent distribution.	Total.	Average per thousand.
Total	14,907,371	100.0	$30,262,462	$2.03	12,106,483	100.0	$24,178,490	$2.00
Cedar	10,963,817	73.5	21,048,993	1.92	9,180,178	75.8	17,169,752	1.87
Cypress	1,386,722	9.3	3,548,711	2.56	1,155,041	9.5	3,006,725	2.60
Yellow pine	1,293,565	8.7	3,178,343	2.46	794,637	6.6	1,799,435	2.26
Redwood	506,651	3.4	658,646	1.30	443,165	3.7	824,287	1.86
White pine	283,213	1.9	638,935	2.26	175,969	1.5	408,139	2.32
Spruce	147,132	1.0	321,848	2.19	123,718	1.0	302,463	2.44
Chestnut	91,766	0.6	297,078	3.24	72,641	0.6	256,206	3.53
Hemlock	76,029	0.5	185,932	2.45	79,231	0.7	212,952	2.69
Western pine	68,934	0.5	143,614	2.08	19,508	0.2	54,848	2.81
Oak	32,818	0.2	96,753	2.95	17,720	0.1	48,831	2.76
All other	56,724	0.4	143,609	2.53	44,675	0.4	94,852	2.12

Of the total of 14,907,371,000 shingles cut in 1909, cedar constituted the material of 73.5 per cent, yellow pine and cypress of approximately 9 per cent each, and redwood of 3.4 per cent. The bulk of the cedar shingles were cut from the western red cedar, and were manufactured in the state of Washington. The shingle output of that state in 1909 amounted to almost three-fourths of the total. Considerable quantities of shingles of the eastern white cedar, or arbor vitæ, are manufactured in Michigan, Wisconsin, and Maine. The cypress shingles are cut chiefly in Louisiana, and the redwood shingles entirely in California.

In recent years the production of shingles has suffered more than that of any other forest product from competition with substitutes, and it is probable that even smaller figures than those reported for 1909 will be recorded within the next few years. Shingle values have fallen off heavily in the last three years, and the average value of $2.03 per thousand in 1909 was 52 cents, or 20.4 per cent, less than the value in 1907. Values in 1908 and 1909 were practically stationary.

Within the last 10 years there has been a decided change in the rank of the different kinds of timber from which shingles are cut, which is brought out in Table 42:

TABLE 42.—*Lumber, lath, and shingles—Rank in production and quantity of shingles cut, with per cent of increase, by kinds of wood: 1909 and 1899.*

KIND OF WOOD.	RANK IN PRODUCTION.		QUANTITY (THOUSANDS).		Per cent of increase.
	1909	1899	1909	1899	
Total			14,907,371	12,102,017	23.2
Cedar	1	1	10,963,817	6,367,345	72.2
Cypress	2	3	1,386,722	1,247,161	11.2
Yellow pine	3	4	1,293,565	890,748	45.2
Redwood	4	5	506,651	630,122	[1] 19.6
White pine	5	2	283,213	1,859,440	[1] 84.8
Spruce	6	7	147,132	218,958	[1] 32.8
Chestnut	7		91,766	(2)	
Hemlock	8	6	76,029	391,949	[1] 80.6
Western pine	9	8	68,934	45,863	50.3
All other			89,542	450,431	[1] 80.1

[1] Decrease.

[2] Not shown separately for 1899.

The most notable features of the table are the increase of 72.2 per cent in cedar shingle production and the decreases of 84.8 per cent in white pine and of 80.6 per cent in hemlock shingle production. These changes in the kinds of timber from which shingles are chiefly manufactured have, of course, brought about corresponding changes in the output of the various states from which the shingle supply comes.

LATH.

Lath are chiefly a by-product of lumber manufacture, and are cut from so many kinds of timber that it is very difficult to get satisfactory reports upon the total production of any one kind. Consequently, only the total production of lath by states in 1909 is shown in Table 43.

TABLE 43.—*Lumber, lath, and shingles—Lath—Quantity and value of production, by states: 1909.*

STATE.	QUANTITY.		VALUE.	
	Thousands.	Per cent distribution.	Total.	Average per thousand.
United States	3,703,195	100.0	$9,963,439	$2.69
Minnesota	478,008	12.9	1,481,825	3.10
Washington	451,384	12.2	934,365	2.07
Louisiana	377,708	10.2	868,728	2.30
Maine	337,086	9.1	937,099	2.78
Wisconsin	299,845	8.1	731,622	2.44
Michigan	218,308	5.9	550,136	2.52
Oregon	161,512	4.4	293,952	1.82
West Virginia	150,820	4.1	432,853	2.87
Pennsylvania	143,059	3.9	765,366	5.35
Virginia	127,555	3.4	289,550	2.27
All other states [1]	957,910	25.9	2,677,943	2.80

[1] Includes Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kentucky, Maryland, Massachusetts, Mississippi, Missouri, Montana, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Ohio, Oklahoma, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, and Wyoming.

Minnesota and Washington are close competitors for first place in lath production, each contributing about one-eighth of the total for the country in 1909. Over one-half of this total was produced in five states. In the Lake states lath are chiefly manufactured from white pine and hemlock; in Washington from Douglas fir; and in the Southern states from yellow pine. The average value per thousand of the lath manufactured in 1909 was $2.69, which is 42 cents more than in 1908 and 83 cents more than in 1899. In 1906, however, the average value was 32 cents greater than in 1909. According to the reports, 46.7 per cent more lath were manufactured in 1909 than in 1899. The reported production of lath in 1909 was, however, less than in 1906, and undoubtedly less than the actual production in 1907. As in the case of shingles, the demand for lath has been diminished to some extent by the introduction of substitutes, and it is probable that the point of maximum annual lath production has been permanently passed.

DETAILED SUMMARY.

Table 44 shows the quantity and value of lumber, lath, and shingles produced in 1909, by states, and for lumber, by species, as well as the number of active mills reporting from each state.

TABLE 44.—*Lumber, lath, and shingles—Number of active mills reporting,*

	STATE.	Number of active mills reporting.	AGGREGATE LUMBER.		SOFTWOODS.	
					Total.	
			Quantity (M feet b. m.).	Value.	Quantity (M feet b. m.).	Value.
1	United States	48,112	44,509,761	$684,479,859	33,896,959	$477,345,046
2	Alabama	2,188	1,691,001	23,938,627	1,516,382	20,489,544
3	Arizona	21	62,731	853,956	62,731	853,956
4	Arkansas	2,060	2,111,300	31,839,283	1,369,187	18,197,457
5	California	305	1,143,507	18,265,539	1,141,301	18,123,211
6	Colorado	250	141,710	1,947,370	141,549	1,944,311
7	Connecticut	420	168,371	2,933,534	44,249	742,494
8	Delaware	151	55,440	811,219	40,990	563,127
9	Florida	491	1,201,734	17,002,600	1,196,912	16,843,082
10	Georgia	2,083	1,342,249	17,100,776	1,259,231	15,727,738
11	Idaho	304	645,800	9,318,424	640,354	9,271,915
12	Illinois	827	170,181	3,505,529	4,521	82,062
13	Indiana	1,604	556,418	14,077,309	1,216	23,523
14	Iowa	350	132,021	3,298,697	80,378	2,141,389
15	Kansas	7	4,716	118,188	....	....
16	Kentucky	2,372	860,712	18,545,844	78,889	1,103,298
17	Louisiana	658	3,551,918	50,539,094	3,345,610	46,681,916
18	Maine	1,243	1,111,565	18,913,678	993,954	16,713,855
19	Maryland	729	267,939	3,997,634	130,884	1,685,222
20	Massachusetts	643	361,200	5,917,802	291,429	4,743,178
21	Michigan	1,323	1,889,724	29,802,089	966,747	14,283,352
22	Minnesota	745	1,561,508	26,408,341	1,479,553	25,008,518
23	Mississippi	1,795	2,572,669	38,322,513	2,156,427	29,178,092
24	Missouri	2,076	660,159	10,041,472	178,146	2,243,174
25	Montana	180	308,582	4,592,052	308,072	4,586,860
26	New Hampshire	708	649,606	10,892,197	592,663	9,966,614
27	New Jersey	276	61,620	1,403,909	24,690	441,467
28	New Mexico	80	91,987	1,389,837	91,987	1,389,837
29	New York	2,308	681,440	13,408,529	404,554	7,860,773
30	North Carolina	3,307	2,177,715	27,971,809	1,776,401	21,897,431
31	Ohio	1,632	542,904	13,247,539	10,389	141,364
32	Oklahoma	380	225,730	3,094,262	141,677	1,926,836
33	Oregon	696	1,898,995	23,448,146	1,895,950	23,383,166
34	Pennsylvania	3,054	1,462,771	26,664,110	820,604	14,831,611
35	Rhode Island	57	25,489	429,746	13,660	227,112
36	South Carolina	1,048	897,660	11,816,420	855,515	11,132,274
37	South Dakota	54	31,057	489,673	30,234	468,929
38	Tennessee	2,643	1,223,849	27,450,569	208,126	3,050,378
39	Texas	719	2,099,130	25,747,212	2,021,617	24,481,373
40	Utah	88	12,638	178,149	12,211	171,744
41	Vermont	725	351,571	5,669,904	242,930	3,947,144
42	Virginia	3,511	2,101,716	28,012,274	1,460,133	17,718,014
43	Washington	1,143	3,862,916	51,083,399	3,861,137	51,058,642
44	West Virginia	1,524	1,472,942	26,148,157	565,395	9,167,525
45	Wisconsin	1,241	2,025,038	33,210,079	1,399,398	22,241,468
46	Wyoming	89	28,602	430,130	28,476	422,570
47	All other states[1]	4	11,230	202,239	10,500	187,500

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[1] Includes Nebraska and Nevada.

and quantity and value of each class of product, by states: 1909.

SOFTWOODS—continued.								
Yellow pine.		Douglas fir.		White pine.		Hemlock.		
Quantity (M feet b. m.).	Value.	Quantity (M feet b. m.).	Value.	Quantity (M feet b. m.).	Value.	Quantity (M feet b. m.).	Value.	
16,277,185	$206,505,297	4,856,378	$60,435,793	3,900,034	$70,830,131	3,051,399	$42,580,800	1
1,506,863	20,267,307	...	...	...	...	...	...	2
...	...	5,527	110,982	...	...	...	...	3
1,313,668	17,287,871	...	...	...	...	...	...	4
...	...	88,852	943,608	...	...	416	4,044	5
...	...	6,046	76,301	...	...	...	...	6
2,152	34,109	...	...	30,579	530,240	11,177	171,567	7
38,320	514,254	...	...	960	22,858	...	...	8
1,110,840	14,696,413	...	...	...	...	...	...	9
1,194,987	14,650,541	...	...	31,324	420,681	966	7,902	10
...	...	63,869	793,253	169,403	2,939,142	1,165	10,357	11
...	...	...	...	153	2,752	...	...	12
...	...	...	...	64	1,158	432	5,439	13
...	...	...	...	80,158	2,138,615	215	2,692	14
...	...	...	...	...	...	...	...	15
38,419	533,256	...	...	4,606	70,564	27,036	359,849	16
2,736,756	34,127,347	...	...	...	...	...	...	17
13,474	225,016	...	...	383,551	6,723,649	109,581	1,537,421	18
97,598	1,229,735	...	...	4,943	73,651	20,912	271,229	19
6,110	92,750	...	...	222,604	3,490,431	24,797	386,585	20
...	...	...	...	258,080	5,752,603	614,622	7,289,417	21
...	...	...	...	1,308,861	22,551,675	15,552	202,176	22
2,114,706	28,252,472	...	...	...	...	...	...	23
142,271	1,648,921	...	...	...	...	...	...	24
...	...	43,270	607,944	1,671	26,736	...	...	25
17,526	276,736	...	...	242,656	3,727,196	66,898	1,004,808	26
16,145	221,025	...	...	323	10,000	212	5,194	27
...	...	4,925	84,070	...	...	...	...	28
...	...	...	...	104,658	2,537,956	162,784	2,718,493	29
1,575,186	19,170,014	...	...	96,624	1,242,585	40,018	464,609	30
1,629	22,122	...	...	203	5,036	8,415	112,088	31
141,664	1,926,630	...	...	...	...	...	...	32
...	...	1,581,621	19,327,409	...	...	24,794	220,419	33
32,623	520,989	...	...	92,431	2,100,032	687,005	12,063,808	34
1,106	16,844	...	...	11,403	190,658	770	11,412	35
797,094	10,290,484	...	...	7,618	75,799	888	9,253	36
...	...	...	...	...	...	...	...	37
117,135	1,459,502	...	...	35,553	647,420	35,593	485,489	38
2,019,423	24,435,018	...	...	...	...	...	...	39
...	...	674	5,466	...	...	...	...	40
3,184	62,502	...	...	43,274	743,447	62,345	896,521	41
1,221,691	14,330,435	...	...	96,061	1,262,242	42,359	551,514	42
...	...	3,060,983	38,476,556	33,960	517,550	103,268	1,089,477	43
16,615	213,004	...	...	25,986	448,258	279,832	4,144,312	44
...	...	...	...	612,327	12,577,197	709,347	8,554,725	45
...	...	611	10,204	...	...	...	...	46
...	...	...	...	...	...	...	...	47

TABLE 44.—*Lumber, lath, and shingles—Number of active mills reporting,*

	STATE.	SOFTWOODS—continued.			
		Spruce.		Western pine.	
		Quantity (M feet b. m.).	Value.	Quantity (M feet b. m.).	Value.
1	United States	1,748,547	$29,561,315	1,499,985	$23,077,854
2	Alabama				
3	Arizona	4	88	57,089	740,444
4	Arkansas				
5	California	13,241	196,099	364,748	6,752,076
6	Colorado	32,471	388,028	95,254	1,369,752
7	Connecticut	262	4,837		
8	Delaware	1,610	23,925		
9	Florida				
10	Georgia	2,789	32,882		
11	Idaho	1,136	15,768	254,283	3,824,416
12	Illinois				
13	Indiana				
14	Iowa				
15	Kansas				
16	Kentucky	2,226	22,638		
17	Louisiana				
18	Maine	421,297	7,267,373		
19	Maryland	5,718	77,765		
20	Massachusetts	36,911	752,984		
21	Michigan	21,797	329,571		
22	Minnesota	78,500	1,191,630		
23	Mississippi				
24	Missouri				
25	Montana	6,837	94,282	146,890	2,351,709
26	New Hampshire	253,107	4,773,598		
27	New Jersey	125	2,525		
28	New Mexico	3,822	102,582	82,739	1,185,650
29	New York	127,864	2,493,348		
30	North Carolina	24,277	241,313		
31	Ohio	78	1,170		
32	Oklahoma				
33	Oregon	57,002	722,215	169,592	2,279,316
34	Pennsylvania	7,307	124,511		
35	Rhode Island	355	6,898		
36	South Carolina	13,803	132,647		
37	South Dakota			30,234	468,929
38	Tennessee	720	7,978		
39	Texas				
40	Utah	2,381	39,144	7,495	105,230
41	Vermont	123,164	2,091,325		
42	Virginia	79,672	1,097,083		
43	Washington	165,331	2,584,124	266,357	3,609,137
44	West Virginia	242,897	4,360,001		
45	Wisconsin	21,168	372,345		
46	Wyoming	675	10,638	15,304	211,195
47	All other states[1]			10,000	180,000

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[1] Includes Nebraska and Nevada.

and quantity and value of each class of product, by states: 1909—Continued.

SOFTWOODS—continued.								
Cypress.		Redwood.		Cedar.		Larch.		
Quantity (M feet b. m.).	Value.	Quantity (M feet b. m.).	Value.	Quantity (M feet b. m.).	Value.	Quantity (M feet b. m.).	Value.	
955,635	$19,549,741	521,630	$7,720,124	346,008	$6,901,948	264,022	$3,270,906	1
6,650	145,635			2,869	76,602			2
								3
55,012	899,446			507	10,140			4
		521,630	7,720,124	14,834	192,100			5
								6
				78	1,727			7
32	504			68	1,586			8
84,811	2,093,984			1,261	52,685			9
27,517	588,589			1,648	27,143			10
				28,644	264,384	97,743	1,139,683	11
4,186	76,688			30	740			12
125	2,545			595	14,381			13
				3	54			14
								15
5,607	84,554			995	32,437			16
608,854	12,554,569							17
				15,140	246,933			18
1,601	29,202			112	3,640			19
				618	14,986			20
				17,647	195,352			21
				1,945	23,807			22
41,666	924,152			55	1,468			23
32,891	522,309			2,984	71,944			24
				60	554	104,130	1,416,168	25
				44	775			26
				7,885	202,723			27
								28
								29
34,506	652,854			5,665	124,290			30
				16	371			31
13	206							32
				26,607	404,426	22,354	243,882	33
				374	7,170			34
				26	1,300			35
36,040	622,411			72	1,680			36
								37
8,709	213,719			8,927	215,230			38
1,972	42,359			222	3,996			39
				20	185			40
				876	10,775			41
5,443	96,015			14,907	380,725			42
				183,952	4,208,822	39,795	471,173	43
				65	1,950			44
				6,257	104,867			45
								46
								47

TABLE 44.—*Lumber, lath, and shingles—Number of active mills reporting,*

	STATE.	SOFTWOODS—continued.					
		Tamarack.		White fir.		Sugar pine.	
		Quantity (M feet b. m.).	Value.	Quantity (M feet b. m.).	Value.	Quantity (M feet b. m.).	Value.
1	United States	157,192	$2,071,996	89,318	$1,170,411	97,191	$1,762,622
2	Alabama						
3	Arizona			111	2,442		
4	Arkansas						
5	California			48,306	676,767	88,822	1,634,325
6	Colorado			585	7,020		
7	Connecticut						
8	Delaware						
9	Florida						
10	Georgia						
11	Idaho			22,795	258,267		
12	Illinois	152	1,882				
13	Indiana						
14	Iowa	2	28				
15	Kansas						
16	Kentucky						
17	Louisiana						
18	Maine	420	5,074				
19	Maryland						
20	Massachusetts	102	1,499				
21	Michigan	44,956	579,932				
22	Minnesota	63,555	884,050				
23	Mississippi						
24	Missouri						
25	Montana			2,647	33,352		
26	New Hampshire	201	3,216				
27	New Jersey						
28	New Mexico			501	17,535		
29	New York						
30	North Carolina						
31	Ohio	48	577				
32	Oklahoma						
33	Oregon			5,586	56,977	8,369	128,297
34	Pennsylvania	809	14,441				
35	Rhode Island						
36	South Carolina						
37	South Dakota						
38	Tennessee						
39	Texas						
40	Utah			796	8,748		
41	Vermont	28	440				
42	Virginia						
43	Washington			7,491	101,803		
44	West Virginia						
45	Wisconsin	46,919	580,857				
46	Wyoming						
47	All other states[1]			500	7,500		

[1] Includes Nebraska and Nevada.

and quantity and value of each class of product, by states: 1909—Continued.

SOFTWOODS—continued.				HARDWOODS.				
Balsam fir.		Lodgepole pine.		Total.		Oak.		
Quantity (M feet b. m.).	Value.	Quantity (M feet b. m.).	Value.	Quantity (M feet b. m.).	Value.	Quantity (M feet b. m.).	Value.	
108,702	$1,520,347	23,733	$385,761	10,612,802	$207,134,813	4,414,457	$90,512,069	1
....	....	....	....	174,619	3,449,083	86,557	1,707,770	2
....	....	....	....	....	....	....	....	3
....	....	....	....	742,113	13,641,826	358,556	7,099,409	4
....	....	452	4,068	2,206	142,328	2,180	141,678	5
463	7,038	6,730	96,172	161	3,059	....	....	6
1	14	....	....	124,122	2,191,040	34,246	680,810	7
....	....	....	....	14,450	248,092	11,128	194,072	8
....	....	....	....	4,822	159,518	1,300	36,517	9
....	....	....	....	83,018	1,373,038	46,329	726,439	10
88	968	1,228	25,677	5,446	46,509	....	....	11
....	....	....	....	165,660	3,423,467	101,279	2,031,657	12
....	....	....	....	555,202	14,053,786	228,343	7,092,334	13
....	....	....	....	51,643	1,157,308	17,335	433,202	14
....	....	....	....	4,716	118,188	524	18,340	15
....	....	....	....	781,823	17,442,546	405,677	8,397,514	16
....	....	....	....	206,308	3,857,178	74,490	1,387,749	17
50,491	708,389	....	....	117,611	2,199,823	18,554	378,687	18
....	....	....	....	137,055	2,312,412	71,792	1,259,232	19
287	3,943	....	....	69,771	1,174,624	13,991	261,212	20
9,645	136,477	....	....	922,977	15,518,737	40,023	1,028,191	21
11,140	155,180	....	....	81,955	1,399,823	15,801	352,204	22
....	....	....	....	416,242	9,144,421	168,508	4,531,180	23
....	....	....	....	482,013	7,798,298	271,623	4,123,237	24
....	....	2,567	56,115	510	5,192	....	....	25
12,231	180,285	....	....	56,943	925,583	15,919	300,869	26
....	....	....	....	36,930	962,442	17,700	493,122	27
....	....	....	....	....	....	....	....	28
9,248	110,976	....	....	276,886	5,547,756	36,520	1,095.600	29
125	1,766	....	....	401,314	6,074,378	209,405	2,912,824	30
....	....	....	....	532,515	13,106,175	259,410	6,521,567	31
....	....	....	....	84,053	1,167,426	60,964	823,624	32
....	....	25	225	3,045	64,980	165	7,267	33
55	660	....	....	642,167	11,832,499	297,154	5,824,218	34
....	....	....	....	11,829	202,634	3,567	64,527	35
....	....	....	....	42,145	684,146	11,217	189,231	36
....	....	....	....	823	20,744	1	22	37
1,489	21,040	....	....	1,015,723	24,400,191	546,500	13,553,200	38
....	....	....	....	77,513	1,265,839	47,252	796,196	39
....	....	845	12,971	427	6,405	....	....	40
10,059	142,134	....	....	108,641	1,722,760	11,463	226,165	41
....	....	....	....	641,583	10,294,260	387,937	5,698,795	42
....	....	....	....	1,779	24,757	106	979	43
....	....	....	....	907,547	16,980,632	456,424	8,065,012	44
3,380	51,477	....	....	625,640	10,968,611	84,391	2,049,857	45
....	....	11,886	190,533	126	7,560	126	7,560	46
....	....	....	....	730	14,739	....	....	47

TABLE 44.—*Lumber, lath, and shingles—Number of active mills reporting,*

	STATE.	HARDWOODS—continued.			
		Maple.		Yellow poplar.	
		Quantity (M feet b. m.).	Value.	Quantity (M feet b. m.).	Value.
1	United States	1,106,604	$17,447,814	858,500	$21,799,854
2	Alabama	1,041	19,717	38,324	814,385
3	Arizona	......	......	......	......
4	Arkansas	18,500	260,480	4,484	95,420
5	California	......	......	......	......
6	Colorado	......	......	......	......
7	Connecticut	3,924	51,051	......	......
8	Delaware	331	5,624	313	5,233
9	Florida	......	......	1,268	33,767
10	Georgia	535	4,494	21,472	403,674
11	Idaho	......	......	......	......
12	Illinois	7,163	123,347	3,628	79,417
13	Indiana	43,644	826,617	29,174	951,948
14	Iowa	3,128	63,060	......	......
15	Kansas	117	2,340	......	......
16	Kentucky	9,069	126,422	149,808	4,175,149
17	Louisiana	445	3,898	886	24,099
18	Maine	16,714	286,144	......	......
19	Maryland	6,391	80,143	5,328	106,880
20	Massachusetts	6,166	83,858	......	......
21	Michigan	543,214	8,664,263	......	......
22	Minnesota	1,519	32,841	......	......
23	Mississippi	770	9,748	25,833	607,334
24	Missouri	10,376	149,103	1,791	34,907
25	Montana	......	......	......	......
26	New Hampshire	7,892	109,857	......	......
27	New Jersey	476	10,981	957	27,007
28	New Mexico	......	......	......	......
29	New York	75,024	1,350,432	2,351	53,955
30	North Carolina	5,510	68,544	74,285	1,410,672
31	Ohio	43,852	732,767	42,317	1,310,134
32	Oklahoma	342	4,897	......	......
33	Oregon	1,491	24,795	......	......
34	Pennsylvania	91,654	1,546,203	14,727	337,985
35	Rhode Island	554	6,238	......	......
36	South Carolina	329	5,277	7,644	164,193
37	South Dakota	......	......	......	......
38	Tennessee	8,610	135,349	164,826	4,367,889
39	Texas	90	900	......	......
40	Utah	......	......	......	......
41	Vermont	27,533	409,416	......	......
42	Virginia	6,104	73,919	114,503	2,622,119
43	Washington	389	7,508	......	......
44	West Virginia	53,782	682,494	154,581	4,173,687
45	Wisconsin	109,925	1,485,087	......	......
46	Wyoming	......	......	......	......
47	All other states[1]	......	......	......	......

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[1] Includes Nebraska and Nevada.

and quantity and value of each class of product, by states: 1909—Continued.

HARDWOODS—continued.								
Red gum.		Chestnut.		Beech.		Birch.		
Quantity (M feet b. m.).	Value.	Quantity (M feet b. m.).	Value.	Quantity (M feet b. m.).	Value.	Quantity (M feet b. m.).	Value.	
706,945	$9,334,268	663,891	$10,703,130	511,244	$6,773,006	452,370	$7,666,186	1
17,092	246,125	1,909	41,177	1,125	16,808	....	....	2
....	....	....	....	....	....	....	....	3
200,953	2,529,998	....	....	78	1,008	138	2,208	4
....	....	....	....	....	....	....	....	5
....	....	....	....	....	....	....	....	6
....	....	77,604	1,299,091	804	11,031	1,361	18,755	7
1,659	24,686	752	12,859	82	1,230	30	615	8
260	3,900	....	....	....	....	....	....	9
4,828	60,157	2,429	33,496	67	626	20	258	10
....	....	....	....	....	....	....	....	11
9,748	130,623	....	....	1,472	14,852	475	6,408	12
23,649	365,614	2,789	53,214	98,729	1,487,846	1,216	16,185	13
....	....	....	....	....	....	627	10,371	14
....	....	....	....	....	....	....	....	15
42,072	532,211	35,648	565,021	36,953	451,196	1,040	13,957	16
34,499	445,382	....	....	581	6,391	....	....	17
....	....	171	2,895	9,638	146,112	62,812	1,222,322	18
4,482	51,229	32,251	457,964	2,968	30,897	1,350	29,835	19
....	....	28,831	501,371	4,685	59,593	8,908	127,028	20
....	....	....	....	111,340	1,357,235	64,341	1,025,596	21
....	....	....	....	....	....	9,785	149,710	22
120,731	1,634,698	1,692	23,688	680	6,052	85	1,442	23
83,905	1,005,182	....	....	325	3,250	1,115	17,885	24
....	....	....	....	....	....	....	....	25
....	....	4,338	73,442	8,397	105,886	13,723	210,374	26
429	9,421	14,722	328,301	106	2,607	57	1,026	27
....	....	....	....	....	....	....	....	28
....	....	18,829	376,580	42,334	613,843	31,990	703,780	29
30,883	408,891	49,738	763,478	880	9,495	658	8,475	30
2,194	32,186	16,424	300,395	49,421	750,211	856	9,031	31
2,557	25,442	....	....	....	....	48	600	32
....	....	....	....	....	....	....	....	33
1,178	16,692	107,838	1,762,073	57,285	751,006	21,650	408,968	34
....	....	6,936	115,207	20	180	148	1,866	35
14,651	190,023	629	9,328	15	165	....	....	36
....	....	....	....	....	....	....	....	37
75,565	1,194,683	71,962	1,121,888	18,341	201,751	1,274	21,620	38
18,898	229,044	....	....	62	682	99	1,238	39
....	....	....	....	....	....	....	....	40
....	....	641	12,820	16,452	211,737	33,450	529,848	41
13,760	159,616	67,996	945,824	2,238	25,357	843	14,862	42
....	....	....	....	....	....	....	....	43
2,952	38,465	119,762	1,903,018	36,722	399,903	14,579	222,476	44
....	....	....	....	9,444	106,056	179,692	2,889,447	45
....	....	....	....	....	....	....	....	46
....	....	....	....	....	....	....	....	47

TABLE 44.—*Lumber, lath, and shingles—Number of active mills reporting,*

	STATE.	HARDWOODS—continued.			
		Basswood.		Elm.	
		Quantity (M feet b. m.).	Value.	Quantity (M feet b. m.).	Value.
1	United States	399,151	$7,781,563	347,456	$6,088,098
2	Alabama	564	11,241	1,082	19,346
3	Arizona	....	....	....	....
4	Arkansas	605	13,274	13,056	194,796
5	California	....	....	....	....
6	Colorado	....	....	....	....
7	Connecticut	745	13,320	367	5,564
8	Delaware	....	....	3	43
9	Florida	....	....	5	60
10	Georgia	88	1,322	274	2,767
11	Idaho	....	....	....	....
12	Illinois	587	9,944	12,102	195,810
13	Indiana	13,917	339,296	40,364	783,869
14	Iowa	4,111	80,288	11,710	225,769
15	Kansas	....	....	720	11,520
16	Kentucky	10,056	182,114	10,130	131,082
17	Louisiana	....	....	1,341	18,653
18	Maine	4,123	70,173	910	13,896
19	Maryland	2,386	38,081	974	12,954
20	Massachusetts	1,296	21,656	366	4,919
21	Michigan	69,453	1,469,625	58,321	1,164,087
22	Minnesota	20,131	344,240	14,645	211,913
23	Mississippi	591	10,863	6,090	91,654
24	Missouri	1,090	18,105	27,913	423,719
25	Montana	....	....	....	....
26	New Hampshire	2,328	37,714	242	3,371
27	New Jersey	356	9,523	102	2,474
28	New Mexico	....	....	....	....
29	New York	36,058	644,717	16,280	263,573
30	North Carolina	6,387	105,833	404	9,425
31	Ohio	16,007	365,280	33,182	670,608
32	Oklahoma	2	33	2,140	27,948
33	Oregon	....	....	....	....
34	Pennsylvania	13,008	281,363	4,954	80,205
35	Rhode Island	....	....	6	84
36	South Carolina	....	....	19	372
37	South Dakota	....	....	....	....
38	Tennessee	11,463	221,007	10,688	144,609
39	Texas	97	1,746	703	12,056
40	Utah	....	....	....	....
41	Vermont	10,478	178,859	1,766	26,137
42	Virginia	9,658	176,452	244	3,177
43	Washington	....	....	....	....
44	West Virginia	29,679	595,658	881	12,387
45	Wisconsin	133,887	2,539,836	75,472	1,319,251
46	Wyoming	....	....	....	....
47	All other states [1]	....	....	....	....

[1] Includes Nebraska and Nevada.

and quantity and value of each class of product, by states: 1909—Continued.

HARDWOODS—continued.								
Cottonwood.		Ash.		Hickory.		Tupelo.		
Quantity (M feet b. m.).	Value.	Quantity (M feet b. m.).	Value.	Quantity (M feet b. m.).	Value.	Quantity (M feet b. m.).	Value.	
265,600	$4,794,424	291,209	$7,116,089	333,929	$10,283,776	96,676	$1,147,401	1
1,269	19,822	3,387	84,675	7,076	194,165	13,074	166,432	2
....	....	....	....	....	....	....	....	3
54,507	1,035,088	33,212	808,712	45,133	1,392,353	6,084	83,533	4
....	....	....	....	....	....	....	....	5
161	3,059	....	....	....	....	....	....	6
476	7,102	1,684	36,459	2,442	58,779	54	972	7
....	....	61	1,405	81	1,958	....	....	8
307	5,526	282	7,608	1,393	71,948	7	192	9
2,260	34,940	3,106	73,799	1,171	25,083	286	3,432	10
5,446	46,509	....	....	....	....	....	....	11
3,939	75,274	2,894	69,716	11,095	317,872	764	9,680	12
4,143	74,284	23,488	717,558	23,513	716,441	262	3,765	13
10,778	224,290	788	19,345	1,490	54,310	....	....	14
586	10,548	116	2,320	1,034	31,020	....	....	15
1,537	25,530	14,958	326,832	41,656	1,259,677	307	3,300	16
47,509	854,687	11,200	243,600	7,704	302,305	24,703	306,070	17
2,012	28,208	2,572	49,022	93	2,059	....	....	18
....	....	2,166	48,713	4,267	143,841	225	3,449	19
799	9,852	2,879	54,298	658	14,226	....	....	20
6,384	92,887	24,865	511,224	1,850	44,548	....	....	21
16,668	256,020	3,326	50,921	28	569	....	....	22
46,222	920,280	15,017	437,896	21,967	736,993	6,146	83,770	23
17,987	326,834	12,685	296,068	33,259	996,107	4,351	52,473	24
510	5,192	....	....	....	....	....	....	25
896	10,806	2,554	61,500	64	1,417	....	....	26
3	49	183	7,214	1,566	54,246	10	300	27
....	....	....	....	....	....	....	....	28
....	....	12,747	293,181	1,426	35,650	....	....	29
309	3,822	4,476	80,389	3,132	82,747	12,219	132,210	30
2,944	64,709	25,753	834,655	21,774	688,058	....	....	31
9,585	133,615	2,879	55,593	2,572	53,292	111	1,339	32
883	16,954	455	15,152	....	....	....	....	33
87	1,563	9,814	231,316	15,267	376,484	19	320	34
50	600	236	6,481	172	3,985	....	....	35
2,048	32,686	2,219	52,701	170	3,157	3,165	36,239	36
810	20,242	12	480	....	....	....	....	37
12,380	273,227	18,709	577,734	58,477	2,171,251	3,180	35,870	38
3,354	63,290	5,348	124,929	922	21,990	25	400	39
427	6,405	....	....	....	....	....	....	40
1,881	25,732	4,531	90,348	100	2,214	....	....	41
254	2,540	5,590	102,241	5,528	88,946	20,942	215,493	42
769	7,321	215	5,349	....	....	....	....	43
352	5,403	9,171	233,494	16,552	330,047	742	8,162	44
4,338	54,789	27,631	503,161	297	6,038	....	....	45
....	....	....	....	....	....	....	....	46
730	14,739	....	....	....	....	....	....	47

TABLE 44.—*Lumber, lath, and shingles—Number of active mills reporting,*

	STATE.	HARDWOODS—continued.			
		Walnut.		Sycamore.	
		Quantity (M feet b. m.).	Value.	Quantity (M feet b. m.).	Value.
1	United States	46,108	$1,972,835	56,511	$834,612
2	Alabama	721	31,414	419	5,346
3	Arizona				
4	Arkansas	544	22,658	5,406	82,550
5	California				
6	Colorado				
7	Connecticut	186	3,765	10	199
8	Delaware	6	165		
9	Florida				
10	Georgia	48	944	80	1,179
11	Idaho				
12	Illinois	5,051	275,431	5,073	75,791
13	Indiana	7,669	327,160	11,003	189,252
14	Iowa	858	29,344	259	5,887
15	Kansas	1,114	33,420	355	5,680
16	Kentucky	4,907	176,358	6,760	87,001
17	Louisiana			94	1,138
18	Maine				
19	Maryland	362	12,109	904	10,550
20	Massachusetts	228	4,872	6	119
21	Michigan	184	6,734	749	12,246
22	Minnesota	28	980		
23	Mississippi	33	1,887	379	5,420
24	Missouri	4,314	182,870	10,526	138,101
25	Montana				
26	New Hampshire	4	80		
27	New Jersey	78	3,987	15	262
28	New Mexico				
29	New York				
30	North Carolina	267	8,648	221	2,528
31	Ohio	8,580	474,731	5,243	94,793
32	Oklahoma	302	7,671	2,353	29,460
33	Oregon				
34	Pennsylvania	1,762	65,088	562	8,436
35	Rhode Island	138	3,429		
36	South Carolina	11	319	10	131
37	South Dakota				
38	Tennessee	4,068	152,021	3,512	46,183
39	Texas	79	2,440	59	1,003
40	Utah				
41	Vermont	5	90		
42	Virginia	2,308	77,618	980	10,692
43	Washington				
44	West Virginia	1,968	59,001	1,533	20,665
45	Wisconsin	285	7,601		
46	Wyoming				
47	All other states[1]				

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[1] Includes Nebraska and Nevada.

and quantity and value of each class of product, by states: 1909—Continued.

HARDWOODS—continued.				LATH.		SHINGLES.		
Cherry.		All other.						
Quantity (M feet b. m.).	Value.	Quantity (M feet b. m.).	Value.	Quantity (thousands).	Value.	Quantity (thousands).	Value.	
24,594	$769,894	37,557	$2,109,794	3,703,195	$9,963,439	14,907,371	$30,262,462	1
117	5,850	862	64,810	50,979	75,959	245,871	588,475	2
....	....	....	....	7,816	18,915	583	1,749	3
332	6,072	525	14,267	78,362	153,590	208,080	462,440	4
....	....	26	650	32,615	73,384	574,342	833,671	5
....	....	....	....	11,494	28,965	657	1,640	6
159	3,037	60	1,105	203	1,234	2,801	9,208	7
....	....	4	202	1,086	3,117	570	3,475	8
....	....	....	....	55,741	120,958	283,206	879,920	9
15	270	10	158	58,704	101,558	443,260	921,271	10
....	....	....	....	86,740	252,413	62,308	113,941	11
163	3,932	227	3,713	1,055	3,661	2,245	6,592	12
1,969	65,824	1,330	42,579	3,600	13,608	7,340	23,393	13
177	4,683	382	6,759	22,978	87,776	8,264	19,751	14
....	....	150	3,000	....	....	....	....	15
792	32,749	10,453	956,433	19,776	462,758	55,010	131,692	16
....	....	2,856	263,206	377,708	868,728	757,868	1,703,486	17
7	230	5	75	337,086	937,099	598,131	1,368,802	18
872	21,565	337	4,970	17,583	63,123	12,352	56,978	19
782	13,974	176	17,646	11,885	35,417	13,347	37,019	20
1,587	44,119	666	97,982	218,308	550,136	891,649	2,098,150	21
8	221	16	204	478,008	1,481,825	74,818	159,963	22
5	200	1,493	41,316	90,926	135,480	151,303	476,137	23
376	8,986	377	21,471	19,931	54,412	51,932	105,923	24
....	....	....	....	35,430	77,946	525	1,318	25
586	10,267	....	....	26,873	90,293	30,132	68,588	26
16	512	154	11,410	19,143	66,235	35,727	186,993	27
....	....	....	....	10,571	29,493	150	525	28
3,327	116,445	....	....	70,878	209,090	91,886	236,994	29
325	9,594	2,215	56,803	70,724	200,856	280,942	970,453	30
2,105	69,212	2,453	187,838	17,508	45,696	3,227	10,409	31
8	112	190	3,800	1,233	2,972	4,635	8,670	32
....	....	51	812	161,512	293,952	293,644	557,389	33
4,324	122,326	884	18,253	143,059	765,366	79,336	292,130	34
2	37	....	....	....	....	1,000	2,773	35
18	324	....	....	28,303	59,719	122,709	347,615	36
....	....	....	....	5,730	20,170	93	327	37
874	27,793	5,294	154,116	31,179	77,324	35,692	114,418	38
....	....	525	9,925	59,627	80,496	137,719	329,662	39
....	....	....	....	264	1,800	725	2,522	40
285	8,482	56	912	7,249	23,269	24,001	61,297	41
220	7,935	2,478	68,674	127,555	289,550	39,172	165,636	42
....	....	300	3,600	451,384	934,365	8,879,467	16,066,405	43
5,058	182,796	2,809	47,964	150,820	432,853	6,829	20,771	44
85	2,347	193	5,141	299,845	731,622	392,863	811,018	45
....	....	....	....	1,224	5,006	960	2,873	46
....	....	....	....	500	1,250	....	....	47

CROSS-TIES PURCHASED.

The total number of wooden cross-ties purchased by the steam and electric railroads of the United States in 1909 was 123,751,000. This represents an increase of 11,285,000 ties, or 10 per cent, over the number purchased in 1908, but a decrease of 29,952,000, or 19.5 per cent, from the number reported for 1907. The year 1907 was one of great activity in the railroad world, while in 1908 the railroads felt the effect of the general business depression and curtailed their expenses accordingly. From a comparison of the figures for 1909, 1908, and 1907, it is evident, however, that the cross-tie industry is rapidly regaining the prosperity enjoyed in 1907.

The figures covering the ties purchased for new track are likewise significant of improvement. Nearly 16,437,000 ties, or 13.3 per cent of the total number, were reported as purchased for new track in 1909, whereas in 1908 only 7,431,000 ties, or 6.6 per cent of the total purchased, were for this use. In 1907 the number was 23,557,000, or 15.3 per cent of the total. Of the ties bought for new track in 1909, the steam railroads reported 13,822,000, or about 84 per cent, and the electric roads 2,615,000. The ties purchased for new track by steam roads formed 12 per cent of all ties purchased by them, while the corresponding proportion for the electric roads was 31.4 per cent. The steam roads, however, showed by far the larger relative gain over 1908 in this respect, since their building activities were restricted during the latter year to a greater extent than was the case with the electric lines.

Table 1 gives the number of ties purchased in 1909, 1908, and 1907, distributed according to class of ties and kind of wood.

Ten kinds of wood supplied 97.3 per cent of all ties purchased. These are oak, southern pine, Douglas fir, western pine, cedar, chestnut, cypress, tamarack, hemlock, and redwood. The oaks led by a wide margin, being the timber used for 57,132,000 ties, or 46.2 per cent of the total number purchased, and more than two and one-half times as many ties as were made from the southern pines, which ranked next in importance and which were used in the production of 21,385,000 ties. More than 63 per cent of all ties purchased were made from some species of oak or from the southern yellow pines.

TABLE 1.—*Cross-ties purchased, classified according to method by which made and kind of wood: 1909, 1908, and 1907.*

KIND OF WOOD.	Total.	Hewed.	Sawed.
1909			
Total	123,751,000	95,499,000	28,252,000
Oak	57,132,000	48,009,000	9,123,000
Southern pine	21,385,000	17,452,000	3,933,000
Douglas fir	9,067,000	1,952,000	7,115,000
Western pine	6,797,000	4,466,000	2,331,000
Cedar	6,777,000	4,964,000	1,813,000
Chestnut	6,629,000	5,026,000	1,603,000
Cypress	4,589,000	3,994,000	595,000
Tamarack	3,311,000	2,981,000	330,000
Hemlock	2,642,000	2,215,000	427,000
Redwood	2,088,000	1,770,000	318,000
White pine	556,000	179,000	377,000
Lodgepole pine	487,000	459,000	28,000
Gum	378,000	332,000	46,000
Spruce	225,000	155,000	70,000
Beech	195,000	163,000	32,000
All other	1,493,000	1,382,000	111,000
1908			
Total	112,466,000	91,982,000	20,484,000
Oak	48,110,000	42,143,000	5,967,000
Southern pine	21,530,000	18,556,000	2,974,000
Douglas fir	7,988,000	1,946,000	6,042,000
Western pine	3,093,000	2,140,000	953,000
Cedar	8,172,000	7,469,000	703,000
Chestnut	8,074,000	5,400,000	2,674,000
Cypress	3,457,000	3,091,000	366,000
Tamarack	4,025,000	3,806,000	219,000
Hemlock	3,120,000	3,036,000	84,000
Redwood	871,000	757,000	114,000
White pine	707,000	565,000	142,000
Lodgepole pine	518,000	487,000	31,000
Gum	262,000	262,000	....
Spruce	141,000	83,000	58,000
Beech	192,000	191,000	1,000
All other	2,206,000	2,050,000	156,000
1907			
Total	153,703,000	118,385,000	35,318,000
Oak	61,757,000	53,702,000	8,055,000
Southern pine	34,215,000	26,227,000	7,988,000
Douglas fir	14,525,000	1,631,000	12,894,000
Western pine	5,019,000	3,255,000	1,764,000
Cedar	8,954,000	8,362,000	592,000
Chestnut	7,851,000	6,330,000	1,521,000
Cypress	6,780,000	5,881,000	899,000
Tamarack	4,562,000	4,152,000	410,000
Hemlock	2,367,000	2,288,000	79,000
Redwood	2,032,000	1,485,000	547,000
White pine	475,000	294,000	181,000
Lodgepole pine	667,000	667,000	....
Gum	15,000	15,000	....
Spruce	104,000	24,000	80,000
Beech	52,000	8,000	44,000
All other	4,328,000	4,064,000	264,000

Douglas fir, a species which will probably be drawn upon heavily as the demand for ties crowds the supply, was used for 9,067,000 ties. Ranking next in importance were western pine, cedar, and chestnut, each being credited with a total of slightly more than 6,500,000 ties. Cypress, tamarack, hemlock, and redwood, each supplying more than 2,000,000 ties, complete the list of the 10 leading kinds of wood purchased. The remaining species, which include white pine, lodgepole pine, gum, spruce, beech, maple, birch, elm, mesquite, locust, ash, walnut, and a number of others, furnished but 3,334,000 ties.

The two leading timbers were the same as in 1908. Oak, with an increase of 9,022,000 ties, contributed a slightly higher proportion of the total number of ties purchased in 1909 than in 1908. Southern pine, on the other hand, furnished a slightly smaller number of ties than in 1908 and a smaller proportion of the total. Douglas fir, with an increase of 1,079,000 ties, held third rank in 1909, the same as in 1907.

Western pine was the only one of the 10 leading kinds of wood which showed a marked increase over the figures for 1907, the year for which the heaviest purchases of ties were recorded. Hemlock supplied more ties in 1908 than in 1907, but fewer in 1909 than in 1908. The purchase of 2,088,000 redwood ties in 1909 is the heaviest recorded for this timber, being slightly greater than in 1907 and exceeding that of 1908 by 1,217,000 ties.

The increasing use of several of the relatively unimportant tie woods, especially gum, spruce, and beech, is noteworthy. The number of gum ties purchased, which in 1907 was only 15,000, increased to 262,000 in 1908, and by a further gain of 116,000 ties, reached a total of 378,000 ties in 1909. Spruce and beech also showed heavy gains during the past two years. The increasing use of these species which are lacking in decay-resisting qualities is evidence of the growing use of methods of wood preservation through chemical treatment.

Approximately 77 per cent of all ties purchased in 1909 were hewed. Although the proportion of hewed ties was lower than in 1908, it was the same as in 1907 and higher than in 1906. About 82 per cent of all ties purchased in 1908 and about 75 per cent of those purchased in 1906 were hewed. In the industry as a whole it is apparent that methods of manufacture are not undergoing any great general and permanent changes.

Cross-ties made of oak showed a slight gain in the relative number of sawed ties. In 1908, 12.4 per cent of the oak ties purchased were sawed, while in 1909, 16 per cent were so reported. In the case of ties made from southern pine the proportion of hewed ties, although less than in 1908, was greater than in 1907. Douglas fir is the only important timber from which more ties are sawed than hewed, 78.5 per cent of the ties reported as made from this timber in 1909 being sawed. The number of ties hewed from Douglas fir does not change from year to year proportionate to the use of the species, the fluctuations in the demand for ties made from this wood being confined largely to sawed ties, which show wide variations annually.

In the case of cedar ties the number of hewed ties shows a steady and heavy decrease since 1907, while the number of sawed ties has increased correspondingly, from 592,000 in 1907 to 1,813,000 in 1909.

Table 2 shows the number and cost of ties purchased by steam and electric railroads of the United States in 1909, classified according to kind of wood and method by which made.

The steam railroads of the United States purchased 115,432,000 cross-ties in 1909, or 93.3 per cent of the total quantity purchased. Of these, 77.9 per cent were hewed and 22.1 per cent sawed. The electric railroads purchased 8,319,000 ties, or 6.7 per cent of the total in 1909, a gain of 1,894,000 ties over 1908. Of these, 67.5 per cent were hewed and 32.5 per cent sawed.

Next to oak ties the electric roads purchased more ties made of chestnut than of any other species. Almost as many southern pine ties were reported by them; and ties of cedar, redwood, and Douglas fir ranked next in importance. Since the steam roads purchased a very high proportion of the total number of ties reported, the rank of the woods used by them is the same as that discussed under the total number purchased by both classes of roads. The less durable woods are little used by the electric roads, doubtless because these roads lack the facilities for preservative treatment which a number of the large steam railroads now possess.

The total cost of all cross-ties purchased in 1909 was $60,320,700, an amount which exceeds the figures for 1908 by more than $4,000,000.

TABLE 2.—*Cross-ties purchased—Number and cost at point of purchase, by class of railroad purchasing, method by which made, and kinds of wood: 1909.*

AGGREGATE.

KIND OF WOOD.	Number.	Cost.	KIND OF WOOD.	Number.	Cost.
Total	123,751,000	$60,320,700	Tamarack	3,311,000	$1,356,000
			Hemlock	2,642,000	865,000
Oak	57,132,000	29,062,000	Redwood	2,088,000	1,108,000
Southern pine	21,385,000	11,112,000	White pine	556,000	237,000
Douglas fir	9,067,000	3,754,000	Lodgepole pine	487,000	224,000
Western pine	6,797,000	3,619,000	Gum	378,000	198,000
Cedar	6,777,000	3,085,000	Spruce	225,000	109,000
Chestnut	6,629,000	2,947,000	Beech	195,000	68,700
Cypress	4,589,000	1,902,000	All other	1,493,000	674,000

PURCHASED BY STEAM RAILROADS.

KIND OF WOOD.	TOTAL.		HEWED.		SAWED.	
	Number.	Cost.	Number.	Cost.	Number.	Cost.
Total	115,432,000	$56,139,000	89,884,000	$43,644,000	25,548,000	$12,495,000
Oak	53,843,000	27,292,000	45,565,000	22,885,000	8,278,000	4,407,000
Southern pine	20,138,000	10,353,000	16,932,000	8,534,000	3,206,000	1,819,000
Douglas fir	8,520,000	3,561,000	1,919,000	741,000	6,601,000	2,820,000
Western pine	6,730,000	3,584,000	4,443,000	2,483,000	2,287,000	1,101,000
Cedar	6,078,000	2,793,000	4,332,000	1,984,000	1,746,000	809,000
Chestnut	5,252,000	2,318,000	4,016,000	1,759,000	1,236,000	559,000
Cypress	4,379,000	1,816,000	3,814,000	1,548,000	565,000	268,000
Tamarack	3,205,000	1,314,000	2,926,000	1,201,000	279,000	113,000
Hemlock	2,628,000	861,000	2,201,000	717,000	427,000	144,000
Redwood	1,420,000	785,000	1,128,000	597,000	292,000	188,000
White pine	503,000	211,000	153,000	56,000	350,000	155,000
Lodgepole pine	487,000	224,000	459,000	213,000	28,000	11,000
Gum	378,000	198,000	332,000	182,000	46,000	16,000
Spruce	217,000	105,000	147,000	74,000	70,000	31,000
Beech	193,000	68,000	161,000	57,000	32,000	11,000
All other	1,461,000	656,000	1,356,000	613,000	105,000	43,000

PURCHASED BY ELECTRIC RAILROADS.

Total	8,319,000	$4,181,700	5,615,000	$2,746,700	2,704,000	$1,435,000
Oak	3,289,000	1,770,000	2,444,000	1,282,000	845,000	488,000
Southern pine	1,247,000	759,000	520,000	259,000	727,000	500,000
Douglas fir	547,000	193,000	33,000	13,000	514,000	180,000
Western pine	67,000	35,000	23,000	19,000	44,000	16,000
Cedar	699,000	292,000	632,000	266,000	67,000	26,000
Chestnut	1,377,000	629,000	1,010,000	467,000	367,000	162,000
Cypress	210,000	86,000	180,000	72,000	30,000	14,000
Tamarack	106,000	42,000	55,000	19,000	51,000	23,000
Hemlock	14,000	4,000	14,000	4,000	....	....
Redwood	668,000	323,000	642,000	313,000	26,000	10,000
White pine	53,000	26,000	26,000	13,000	27,000	13,000
Lodgepole pine	....	....	....	....	....	....
Gum	....	....	....	....	....	....
Spruce	8,000	4,000	8,000	4,000	....	....
Beech	2,000	700	2,000	700	....	....
All other	32,000	18,000	26,000	15,000	6,000	3,000

Table 3 shows the average cost of cross-ties purchased by steam and electric railroads in 1909, 1908, and 1907, classified according to method by which made and kind of wood.

TABLE 3.—*Average cost of cross-ties purchased, by class of railroad purchasing, method by which made, and kinds of wood: 1909, 1908, and 1907.*

PURCHASED BY STEAM AND ELECTRIC RAILROADS.

KIND OF WOOD.	TOTAL.			HEWED.			SAWED.		
	1909	1908	1907	1909	1908	1907	1909	1908	1907
Total	$0.49	$0.50	$0.51	$0.49	$0.50	$0.51	$0.49	$0.52	$0.54
Oak	0.51	0.51	0.53	0.50	0.51	0.53	0.54	0.56	0.59
Southern pine	0.52	0.54	0.54	0.50	0.53	0.51	0.59	0.60	0.62
Douglas fir	0.41	0.45	0.47	0.39	0.41	0.42	0.42	0.46	0.48
Western pine	0.53	0.51	0.50	0.56	0.48	0.49	0.48	0.57	0.52
Cedar	0.46	0.49	0.50	0.45	0.50	0.50	0.46	0.45	0.49
Chestnut	0.44	0.49	0.48	0.44	0.48	0.48	0.45	0.51	0.48
Cypress	0.41	0.44	0.46	0.41	0.43	0.45	0.47	0.52	0.51
Tamarack	0.41	0.50	0.49	0.41	0.51	0.50	0.41	0.41	0.41
Hemlock	0.33	0.38	0.34	0.33	0.38	0.34	0.34	0.36	0.44
Redwood	0.53	0.51	0.59	0.51	0.49	0.60	0.62	0.63	0.57
White pine	0.43	0.47	0.41	0.38	0.47	0.37	0.45	0.51	0.47
Lodgepole pine	0.46	0.48	0.50	0.47	0.48	0.50	0.39	0.41	....
Gum	0.52	0.45	0.23	0.55	0.45	0.23	0.34	....	....
Spruce	0.49	0.47	0.39	0.51	0.52	0.46	0.44	0.40	0.38
Beech	0.36	0.44	0.40	0.36	0.44	0.34	0.36	0.42	0.41
All other	0.45	0.38	0.44	0.45	0.37	0.45	0.41	0.43	0.68

PURCHASED BY STEAM RAILROADS.

KIND OF WOOD.	TOTAL.			HEWED.			SAWED.		
	1909	1908	1907	1909	1908	1907	1909	1908	1907
Total	$0.49	$0.50	$0.51	$0.49	$0.50	$0.50	$0.49	$0.52	$0.54
Oak	0.51	0.51	0.53	0.50	0.50	0.52	0.53	0.56	0.58
Southern pine	0.51	0.53	0.53	0.50	0.53	0.51	0.57	0.57	0.62
Douglas fir	0.42	0.45	0.47	0.39	0.41	0.41	0.43	0.47	0.48
Western pine	0.53	0.51	0.50	0.56	0.48	0.49	0.48	0.58	0.51
Cedar	0.46	0.50	0.50	0.46	0.50	0.50	0.46	0.46	0.48
Chestnut	0.44	0.50	0.48	0.44	0.49	0.47	0.45	0.52	0.48
Cypress	0.41	0.44	0.46	0.41	0.43	0.45	0.47	0.52	0.51
Tamarack	0.41	0.50	0.50	0.41	0.51	0.50	0.40	0.41	0.40
Hemlock	0.33	0.38	0.34	0.33	0.38	0.34	0.34	0.36	0.44
Redwood	0.55	0.50	0.57	0.53	0.48	0.57	0.64	0.63	0.55
White pine	0.42	0.47	0.38	0.37	0.46	0.37	0.44	0.51	0.40
Lodgepole pine	0.46	0.48	0.50	0.46	0.48	0.50	0.39	0.41	....
Gum	0.52	0.45	0.23	0.55	0.45	0.23	0.34	....	....
Spruce	0.48	0.45	0.39	0.51	0.50	0.46	0.44	0.40	0.38
Beech	0.36	0.44	0.40	0.35	0.44	0.34	0.36	0.42	0.41
All other	0.45	0.38	0.46	0.45	0.37	0.45	0.41	0.43	0.70

PURCHASED BY ELECTRIC RAILROADS.

KIND OF WOOD.	TOTAL.			HEWED.			SAWED.		
	1909	1908	1907	1909	1908	1907	1909	1908	1907
Total	$0.50	$0.51	$0.56	$0.49	$0.50	$0.56	$0.53	$0.54	$0.58
Oak	0.54	0.53	0.60	0.52	0.52	0.59	0.58	0.56	0.62
Southern pine	0.61	0.63	0.65	0.50	0.54	0.60	0.69	0.73	0.71
Douglas fir	0.35	0.37	0.48	0.39	0.34	0.49	0.35	0.38	0.47
Western pine	0.53	0.40	0.56	0.82	0.47	0.57	0.37	0.37	0.55
Cedar	0.42	0.44	0.48	0.42	0.45	0.47	0.39	0.42	0.50
Chestnut	0.46	0.47	0.49	0.46	0.47	0.50	0.44	0.48	0.49
Cypress	0.41	0.42	0.47	0.40	0.41	0.47	0.48	0.54	0.58
Tamarack	0.39	0.37	0.43	0.34	0.37	0.41	0.45	....	0.43
Hemlock	0.31	0.38	0.42	0.31	0.38	0.42	....	....	....
Redwood	0.48	0.52	0.63	0 49	0.51	0.63	0.39	0.58	0.62
White pine	0.49	0.60	0.64	0.50	0.63	0.50	0.49	0.43	0.65
Lodgepole pine	....	....	....	....	....	....	....	....	....
Gum	....	....	....	....	....	....	....	....	....
Spruce	0.54	0.58	....	0.54	0.58	....	....	....	....
Beech	0.40	....	....	0.40	....	....	....	....	....
All other	0.54	0.49	0.60	0.57	0.51	0.59	0.45	0.45	0.62

In 1909 the average cost per tie was 49 cents as compared with 50 cents in 1908 and 51 cents in 1907. Nevertheless the average cost of all ties reported as purchased was higher in 1909 than in 1906, when it was 47 cents. A comparison of the figures for 1909, 1908, and 1907 shows that in the case of each of the leading kinds of tie timbers, except western pine, the average price was less in 1909 than in 1907, though the prices paid for chestnut, tamarack, and hemlock were greater in 1908 than in 1907. Western pine ties showed an average cost of 53 cents in 1909 as compared with 51 cents in 1908 and 50 cents in 1907. Sawed ties of this timber were purchased for less in 1909 than in 1908 or 1907; but there was a remarkable increase in the cost of the hewed ties, due probably to the inclusion in the reports of large numbers of ties which had been treated with a preservative before purchase.

Hemlock ties fell in price from an average of 38 cents in 1908 to 33 cents in 1909. The average cost of chestnut ties was 4 cents lower in 1909 than in 1907, while that of redwood ties was 6 cents lower.

In 1909 the steam roads and electric roads each paid the same average price for hewed ties. Sawed ties were purchased for the same average price (49 cents) as hewed ties by the steam roads, but the electric roads paid 4 cents more for sawed ties. It is an interesting fact that although the average tie used by the electric roads is smaller than that used by the steam roads, the price paid for it is generally greater. This is due not only to the disadvantages incident to contracts for smaller quantities of material, but also to the fact that the electric roads are more likely to purchase ties at points where the price includes railroad transportation charges.

The highest average price reported by the steam railroads was 64 cents for sawed redwood ties and the lowest 33 cents for hewed hemlock. The electric roads paid as high as 82 cents for hewed western pine ties, these being practically all treated, while the lowest average price paid by them was 31 cents for hewed hemlock.

PRESERVATION.

Many species of timber unfitted for use as ties because they lack decay-resisting qualities or immunity to insect attacks, are made available for the purpose by the use of a preservative treatment. Even in the case of wood that is naturally more or less durable, such treatment is often economical, the added life in service more than paying for the increase in the original cost. Of the 78 species of timber which the different specifications of the steam railroads of the United States permit to be used as cross-ties, over one-half are acceptable for such use only after the application of a preservative. Among he woods most commonly treated are pine, red or black oak, Douglas ir, hemlock, gum, spruce, and beech.

The remarkable increase in the use of western pine, gum, spruce, and beech cross-ties, apparent in the reported purchases of ties in 909, is doubtless due to the use of wood preservatives.

Table 4 shows the number of cross-ties reported as purchased already treated or as treated after purchase by steam and electric railroads of the United States in 1909, 1908, and 1907.

TABLE 4.—*Number of cross-ties purchased already treated or treated after purchase, by class of railroad purchasing: 1909, 1908, and 1907.*

CLASS OF RAILROAD PURCHASING.	Total treated.	Treated before purchase.	Treated after purchase.
1909			
All railroads	22,033,000	7,663,000	14,370,000
Steam railroads	21,198,000	7,081,000	14,117,000
Electric railroads	835,000	582,000	253,000
1908			
All railroads	23,776,000	10,973,000	12,803,000
Steam railroads	23,157,000	10,566,000	12,591,000
Electric railroads	619,000	407,000	212,000
1907			
All railroads	19,856,000	8,389,000	11,467,000
Steam railroads	19,192,000	7,975,000	11,217,000
Electric railroads	664,000	414,000	250,000

Of the cross-ties purchased in 1909, 22,033,000 were given a preservative treatment. This number is 1,743,000 less than that reported for the preceding year, but 2,177,000 greater than that for 1907. The proportion which treated ties formed of the entire number purchased was 17.8 per cent in 1909, 21.1 per cent in 1908, and 12.9 per cent in 1907. Of the number treated in 1909, about one-third were treated before purchase and two-thirds after purchase.

The steam railroads treated more ties after purchase in 1909 than in 1908 or 1907, although the total number of treated ties reported by them was 1,959,000 less in 1909 than in 1908. The number purchased by them already treated was 3,485,000 less than in 1908. The electric railroads reported 835,000 treated ties, of which 582,000, or 69.7 per cent, were treated before purchase and 253,000, or 30.3 per cent, after purchase.

X There are now more than 70 wood-preserving plants in the United States. A number of the large steam roads possess expensive plants fitted to handle large quantities of timber in a very efficient manner. Nearly all treated cross-ties used by steam railroads are treated in closed cylinders permitting the application of pressure and designed to secure a heavy absorption of the preservative. The principal preservatives used were creosote oil, and, to an almost equal degree, a solution of zinc chloride. Many ties are treated with an emulsion of creosote oil and a solution of zinc chloride, and one road treated large quantities of its ties with a heavy injection of crude petroleum. Other preservatives are also used.

The electric railroads own but a few cylinder-treating plants and are generally obliged to purchase treated ties or to use some less expensive method of treatment, such as dipping the ties in a bath of the preservative. Many different preservatives are used in this manner.

PULP-WOOD CONSUMPTION.

The year 1909 was marked in the pulp industry, as in most other lines of industrial enterprise, by a resumption of the good business conditions which existed prior to 1908. The total consumption of pulp wood by the 253 mills reporting in 1909 was 4,001,607 cords, an increase of 654,654 cords, or 19.6 per cent, over the amount used by the 251 mills reporting in 1908, and of 38,947 cords, or 1 per cent, over the quantity reported in 1907, which year previously held the record. The expectations expressed in the bulletin on pulp-wood consumption for 1908 have been fully realized, the industry now requiring more than double the amount of pulp wood consumed in 1900. The total cost of the pulp wood has likewise greatly increased, not only because of the greater quantity used, but also because of the higher average cost per cord of the wood delivered at the mill.

CONSUMPTION, BY KINDS OF WOOD.

Table 1 gives the quantity of wood used for pulp in the past four years, by kind. In these figures the results of the temporary business depression prevailing in 1908 are apparent.

TABLE 1.—*Pulp-wood consumption—Quantity of wood consumed, by kinds, with per cent distribution: 1906 to 1909.*

KIND OF WOOD.	1909		1908		1907		1906	
	Quantity (cords).	Per cent distribution.	Quantity (cords).	Per cent distribution.	Quantity (cords).	Per cent distribution.	Quantity (cords).	Per cent distribution.
Total	4,001,607	100.0	3,346,953	100.0	3,962,660	100.0	3,661,176	100.0
Spruce:								
Domestic	1,653,249	41.3	1,487,356	44.4	1,795,278	45.3	1,785,680	48.8
Imported	768,332	19.2	672,483	20.1	905,575	22.8	721,322	19.7
Hemlock	559,657	14.0	569,173	17.0	576,154	14.5	528,381	14.4
Poplar:								
Domestic	302,876	7.6	279,564	8.4	352,142	8.9	310,920	8.5
Imported	25,622	0.6	22,653	0.7	19,798	0.5	17,550	0.5
Balsam	95,366	2.4	45,309	1.4	43,884	1.1	33,886	0.9
Pine	90,885	2.3	84,189	2.5	78,583	2.0	69,277	1.9
White fir	37,176	0.9	(1)	....	(1)	....	(1)	....
Cottonwood	36,898	0.9	45,679	1.4	(1)	....	(1)	....
Beech	31,390	0.8	(1)	....	(1)	....	(1)	....
All other species	151,179	3.8	140,547	4.2	191,246	4.8	194,160	5.3
Slab wood and other mill waste	248,977	6.2	(2)	....	(2)	....	(2)	....

[1] Included under "All other species."

[2] Included with other wood, by species.

There has been a notable decrease in the proportionate use of the higher-priced woods, such as spruce and poplar. In 1909, 1,653,249 cords of domestic spruce, together with 768,332 cords of imported spruce, were used, making a total of 2,421,581 cords of spruce, or 60.5 per cent of the total pulp wood consumed. Although this quantity represents an actual increase of 261,742 cords over the quantity of spruce used in 1908, the proportion of the total which it formed was 4 per cent less. The decrease in the proportion is more clearly marked when a comparison is made with the figures for spruce in 1907, a year in which conditions were much more normal than in 1908. The quantity, as well as the proportion, of spruce used in 1907 was larger than in 1909. Poplar formed 8.2 per cent of the total in 1909, as compared with 9.1 per cent in 1908 and 9.4 per cent in 1907.

The figures for hemlock presented in this table show little change during the past four years. The quantity shown for 1908, however, included 105,680 cords of slab wood and other mill waste, which item in 1909 was not distributed by species. On this account the quantity and proportion appear larger for 1908 than for 1909, whereas if the slab wood and other mill waste were deducted they would be smaller than in 1907 or 1909.

In connection with the decreasing use of spruce should be noticed the increasing use of balsam, pine, and white fir. In former years it was the practice in some of the logging operations in the New England states to allow a certain percentage of balsam with the spruce without requiring any mention of it. At present, however, the tendency is to separate the two woods more closely, which may account in part for the increased quantity of balsam reported and its change in rank from last to fourth place. The use of pine has increased slightly from year to year as measured by actual quantity consumed, but its proportion of the total was about the same in each of the four years shown in the table. Particularly interesting is the use of white fir (*Abies concolor*), which was reported separately for the first time in 1909. The quantity of this wood used was relatively small, probably because its value as a pulp wood is not generally known. It can be reduced readily by the sulphite process. It has a fiber about one-half longer than that of the eastern spruce, and its cooking conditions are, on the whole, not appreciably different from those for spruce. While no definite figures for the quantity of white fir in the United States have been obtained, it is known that there is a large quantity in northern California, southern Oregon, and other Western states. In some forests in California it is said that this wood forms from 30 to 45 per cent of the stand. Previously there have been few uses for white fir, and the demand has been slight. Its use for pulp will mean much for national forest management, increasing its value in timber sales.

The use of cottonwood has been declining, and the indications are that within a few years this wood will be superseded as a pulp wood. Under the head "All other species" are included chestnut, maple, basswood, gum, birch, Douglas fir, tamarack, cedar, buckeye, willow, and cucumber, arranged in the order of quantity consumed.

As the result of a slight change in the form of the schedule, 248,977 cords of slab wood and other mill waste used for pulp were reported separately in 1909, whereas in previous years this item was included with the regular pulp woods, by species. In 1908 there were approximately 257,000 cords, principally spruce and hemlock. The quantity used in 1909 was over 55,000 cords greater than in 1907.

CONSUMPTION, BY STATES.

The number of mills, the quantity of pulp wood consumed, and the quantity of pulp produced are given in Table 2, by states, for 1909, 1908, and 1907.

Although the number of mills changed slightly in several states, the total in 1909 was only two greater than in 1908 and five less than in 1907. The greatest change in the number of mills in the last year occurred in Maine, where there were 35 mills in 1908 and 37 in 1909. The 90 mills in New York used 921,882 cords of pulp wood in 1909, or 23 per cent of the total quantity reported, and 128,961 cords more than in 1908. Maine was the second state in pulp-wood consumption, with 903,962 cords, or 22.6 per cent of the total, which represents an increase of 186,149 cords, or 25.9 per cent, over 1908. The state third in rank was Wisconsin, with 576,019 cords, which was 14.4 per cent of the total, and 20.9 per cent more than in 1908. Wisconsin had the same number of mills as Maine in 1909, 37. New Hampshire was fourth in rank, with 349,997 cords, or 8.7 per cent of the total, and Pennsylvania fifth, with 295,038 cords, or 7.4 per cent. In North Carolina, which ranked sixth, the quantity used, while much greater than in 1908, was less than half that used in Pennsylvania. These six states reported nearly four-fifths of the total quantity consumed in 1909.

TABLE 2.—*Pulp-wood consumption—Number of mills, quantity and cost of wood consumed, with average cost per cord, and quantity of pulp produced, by states: 1907 to 1909.*

STATE.	Year.	Number of mills.	WOOD CONSUMED.			Pulp produced (tons).
			Quantity (cords).	Cost.	Average cost per cord.	
United States	1909	253	4,001,607	$34,477,540	$8.62	2,491,406
	1908	251	3,346,953	28,047,473	8.38	2,118,947
	1907	258	3,962,660	32,360,276	8.17	2,547,879
Maine	1909	37	903,962	8,267,958	9.15	603,852
	1908	35	717,813	6,326,109	8.81	490,365
	1907	38	942,437	8,010,755	8.50	653,385
Massachusetts	1909	5	45,899	403,778	8.80	25,804
	1908	5	37,079	294,899	7.95	20,626
	1907	5	47,443	402,869	8.49	27,811
Michigan	1909	8	132,846	835,861	6.29	64,369
	1908	9	114,917	758,666	6.60	54,288
	1907	10	125,550	759,097	6.05	64,166
Minnesota	1909	7	47,373	332,548	7.02	37,295
	1908	7	41,795	313,051	7.49	32,572
	1907	6	43,173	338,416	7.84	34,286
New Hampshire	1909	11	349,997	3,276,620	9.36	212,599
	1908	10	284,755	2,732,075	9.59	181,338
	1907	11	429,342	3,429,647	7.99	250,721
New York	1909	90	921,882	9,630,575	10.45	686,323
	1908	90	792,921	7,618,773	9.61	566,658
	1907	92	990,666	9,021,438	9.11	731,278
North Carolina [1]	1909	4	145,090	919,733	6.34	53,926
	1908	5	76,807	461,752	6.01	36,024
Ohio	1909	4	55,275	459,025	8.30	26,977
	1908	4	46,183	360,847	7.81	23,253
	1907	4	59,110	464,895	7.86	31,205
Oregon	1909	5	104,021	797,267	7.66	83,692
	1908	4	83,646	675,419	8.07	64,852
	1907	5	80,614	633,121	7.85	61,366
Pennsylvania	1909	15	295,038	2,139,087	7.25	135,525
	1908	15	272,980	1,884,973	6.91	124,377
	1907	16	318,477	2,196,390	6.90	143,663
Vermont	1909	11	70,977	722,777	10.18	59,356
	1908	12	119,126	772,368	6.48	107,067
	1907	12	89,238	728,895	8.17	74,246
Virginia	1909	6	92,039	772,963	8.40	48,641
	1908	5	61,266	513,788	8.39	35,443
	1907	5	88,491	743,333	8.40	49,970
West Virginia	1909	5	109,166	582,985	5.34	48,797
	1908	5	93,154	504,344	5.41	46,986
	1907	5	96,185	548,528	5.70	47,525
Wisconsin	1909	37	576,019	4,294,229	7.46	324,509
	1908	37	476,619	3,958,721	8.31	268,461
	1907	37	507,295	4,074,625	8.03	299,784
All other states	[2] 1909	8	152,023	1,042,134	6.86	79,741
	[2] 1908	8	127,892	871,688	6.82	66,637
	[3] 1907	12	144,639	1,008,267	6.97	78,473

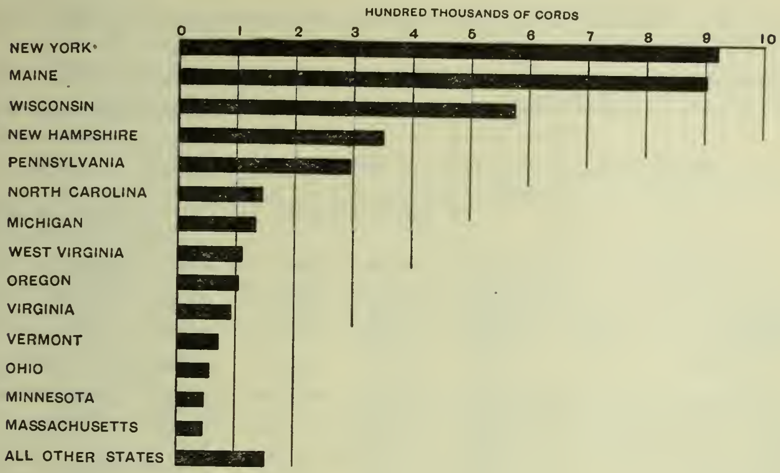
[1] Statistics for 1907 included in "All other states."

[2] Includes California, Delaware, Maryland, South Carolina, Texas, and Washington.

[3] Includes California, Delaware, Illinois, Indiana, Maryland, North Carolina, South Carolina, Texas, and Washington.

The rank of the states in pulp-wood consumption in 1909 is shown graphically in the following diagram:

DIAGRAM 1.—*Pulp wood consumed, by states: 1909.*



The total cost of the raw material at the mill was greater by over $6,430,000 than in 1908. The average cost per cord also increased, being $8.62, or 24 cents more than in 1908 and 45 cents more than in 1907. In New York and Vermont the cost in 1909 was over $10 per cord. The advance in average cost was most marked in Vermont, where the increase was from $6.48 in 1908 to $10.18 in 1909, though in 1907 the average was $8.17. In most cases the change in price was slight. A few states, notably the Lake states of Michigan, Minnesota, and Wisconsin, reported slight decreases in the average cost per cord between 1908 and 1909. The greatest falling off, 85 cents, was in Wisconsin.

The total quantity of air-dry pulp produced in 1909 was 2,491,406 tons of 2,000 pounds, which was 372,459 tons, or 17.6 per cent, more than the quantity produced in 1908, and 56,473 tons, or 2.2 per cent, less than the quantity produced in 1907. The average yield per cord of pulp wood, by all processes, was 1,245 pounds in 1909, as compared with 1,266 pounds in 1908 and 1,286 pounds in 1907. The gradual decrease apparent in the quantity of pulp obtained from a cord of pulp wood is due in part to the increasing use of woods other than spruce, in part to the fact that a lower proportion of the total is reduced by the mechanical pulp process, and in part probably to the relative condition of the air-dryness reported.

CONSUMPTION, BY KINDS OF WOOD AND BY STATES.

The consumption of pulp wood, by kind and by states, is given in Table 3.

TABLE 3.—*Pulp-wood consumption—Quantity of wood consumed, by kind and by states: 1909.*

STATE.	NUMBER OF CORDS OF WOOD CONSUMED IN MANUFACTURE OF WOOD PULP.					
	Total.	Spruce.		Hemlock.	Poplar.	
		Domestic.	Imported.		Domestic.	Imported.
United States	4,001,607	1,653,249	768,332	559,657	302,876	25,622
Maine	903,962	552,032	166,500	10,954	119,550	3,502
Massachusetts	45,899	15,827	13,529	100	2,274	1,548
Michigan	132,846	12,459	17,470	58,235	774	2,984
Minnesota	47,373	47,223	...	...	...	...
New Hampshire	349,997	188,229	106,625	1,791	...	...
New York	921,882	384,883	408,719	42,431	52,797	17,547
North Carolina	145,090	30,000	...	30,000	6,250	...
Ohio	55,275	5,000	9,131	8,443	136	...
Oregon	104,021	32,340	...	41,113	...	...
Pennsylvania	295,038	16,732	19,894	35,235	30,168	...
Virginia	92,039	46,089	...	...	30,468	...
West Virginia	109,166	31,399	...	19,735	1,443	...
All other states[1]	799,019	291,036	26,464	311,620	59,016	41

STATE.	NUMBER OF CORDS OF WOOD CONSUMED IN MANUFACTURE OF WOOD PULP—continued.					
	Pine.	Balsam.	White fir.	Beech.	All other species.	Slab wood and other mill waste.
United States	90,885	95,366	37,176	31,390	188,077	248,977
Maine	781	1,615	...	...	341	48,687
Massachusetts	...	50	...	...	...	12,571
Michigan	2,964	13,195	...	...	644	24,121
Minnesota	150	...	...	...	...	...
New Hampshire	...	51,015	...	...	...	2,337
New York	4,375	8,808	...	...	1,822	500
North Carolina	6,340	...	...	...	72,500	...
Ohio	...	...	...	...	12,191	20,374
Oregon	...	...	16,721	...	13,847	...
Pennsylvania	46,602	2,000	...	31,390	47,956	65,061
Virginia	5,638	...	...	...	52	9,792
West Virginia	114	...	...	...	...	56,475
All other states[1]	23,921	18,683	20,455	...	38,724	9,059

[1] Includes California, Delaware, Maryland, South Carolina, Texas, Vermont, Washington, and Wisconsin.

In New York, the leading state in the consumption of pulp wood, 41.7 per cent of the total was domestic spruce, 44.3 per cent imported spruce, 5.7 per cent domestic poplar, and 4.6 per cent hemlock.

Maine, the second state in rank, used more domestic spruce than any other state. This wood formed 61.1 per cent of the total quantity used in Maine, while imported spruce and domestic poplar, or "popple," formed 18.4 per cent and 13.2 per cent, respectively.

The only other item of importance, slabs and other mill waste, comprised 5.4 per cent of the total.

Of the pulp wood used in Michigan, 43.8 per cent was hemlock. Spruce, imported and domestic, slab wood, and balsam also contributed considerable proportions of the total for this state.

In New Hampshire spruce was used almost to the exclusion of every other kind of wood, except balsam. Domestic spruce formed 53.8 per cent, imported spruce 30.5 per cent, and balsam 14.6 per cent of the total quantity.

In North Carolina equal quantities of domestic spruce and hemlock were used, and in addition a large quantity of the varieties designated "All other species."

The principal woods employed in Oregon were domestic spruce, hemlock, and white fir. The spruce and hemlock are not the same varieties as those used in the Eastern and Lake states, but are closely related botanically.

In Pennsylvania about equal quantities of spruce, hemlock, domestic poplar, and beech were consumed, together with large proportions of pine, of slabs and other mill waste, and of the varieties designated "All other species." All the beech used for pulp was reported from this state. In West Virginia spruce, hemlock, and slab wood were the principal kinds of material.

Of the consumption shown for "All other states," 72.1 per cent was in Wisconsin. Domestic spruce formed 36.4 per cent, hemlock 39 per cent, and domestic poplar 7.4 per cent of the wood reported by this group of eight states.

CONSUMPTION, BY PROCESS OF MANUFACTURE.

Table 4 shows the consumption of pulp wood, by kind and by process of manufacture.

As in 1908, more than one-half of the wood used was reduced by the sulphite process. The mechanical process was employed in reducing 31.1 per cent of the pulp wood, and the soda process for the balance, 14.3 per cent.

Of the domestic spruce, 51 per cent was reduced by the sulphite process, about 49 per cent by the mechanical process, and less than two-tenths of 1 per cent by the soda process. All the imported spruce was reduced by the mechanical and sulphite processes, nearly 59 per cent of it by the latter process.

Of the poplar consumed, nearly 93 per cent was reduced by the soda process and less than 1 per cent by the sulphite process. On the other hand, 95.1 per cent of the hemlock was reduced by the sulphite process and less than two-tenths of 1 per cent by the soda process. The sulphite process was the principal method used in the reduction of balsam, white fir, and slabs and other mill waste, 87.9 per cent of the latter being reduced in this manner. The soda process was the only one used in the reduction of beech, and the principal one in the reduction of pine and miscellaneous kinds of wood. It can be successfully used with a greater variety of woods than any other commercial process. This method is not used at all, however, for balsam and white fir.

TABLE 4.—*Pulp-wood consumption—Quantity of wood consumed, by kinds and by process of manufacture: 1909.*

KIND OF WOOD.	NUMBER OF CORDS OF WOOD CONSUMED IN MANUFACTURE OF WOOD PULP.			
	Total.	Reduced by—		
		Mechanical process.	Sulphite process.[1]	Soda process.
Total	4,001,607	1,246,121	2,183,984	571,502
Spruce:				
Domestic	1,653,249	806,282	844,023	2,944
Imported	768,332	317,289	451,043	....
Hemlock	559,657	26,236	532,431	990
Poplar:				
Domestic	302,876	17,905	2,930	282,041
Imported	25,622	3,025	....	22,597
Balsam	95,366	20,688	74,678	....
Pine	90,885	24,144	20,289	46,452
White fir	37,176	10,337	26,839	....
Beech	31,390	....	....	31,390
All other species	188,077	15,515	12,955	159,607
Slab wood and other mill waste	248,977	4,700	218,796	25,481

[1] Includes 38,000 cords reduced by the sulphate process.

CONDITION OF THE WOOD.

Wood for the manufacture of pulp is received at the mill either rough, peeled, or rossed. Rossing is done by machinery, and peeling usually by hand. A cord of rossed or peeled wood produces more pulp than a cord of rough wood, since the bark, which is of no value for pulp, forms an important part of the volume of the latter. The price per cord was in most cases less for rough wood than for peeled, and highest for rossed wood. The apparent exceptions to this rule to be noted in the table are due to the peculiar local conditions under which certain of the firms that reported were working.

The quantity, cost, and average cost per cord of the wood consumed, according to the condition in which it was received at the mill, are given by states in Table 5.

TABLE 5.—*Pulp-wood consumption—Quantity and cost of wood consumed, according to condition in which received at the mill, with average cost per cord, by states: 1909.*

STATE.	WOOD CONSUMED IN MANUFACTURE OF WOOD PULP.					
	Total.			Rough.		
	Quantity (cords).	Cost.	Average cost per cord.	Quantity (cords).	Cost.	Average cost per cord.
United States	4,001,607	$34,477,540	$8.62	2,219,083	$17,608,736	$7.94
Maine	903,962	8,267,958	9.15	613,197	5,437,072	8.87
Massachusetts	45,899	403,778	8.80	27,584	198,682	7.20
Michigan	132,846	835,861	6.29	97,176	599,447	6.17
Minnesota	47,373	332,548	7.02	47,373	332,548	7.02
New Hampshire	349,997	3,276,620	9.36	90,833	667,605	7.35
New York	921,882	9,630,575	10.45	430,851	3,896,335	9.04
North Carolina	145,090	919,733	6.34	110,625	681,250	6.16
Ohio	55,275	459,025	8.30	25,374	168,183	6.63
Oregon	104,021	797,267	7.66	17,765	95,666	5.39
Pennsylvania	295,038	2,139,087	7.25	61,496	363,363	5.91
Vermont	70,977	722,777	10.18	36,247	338,227	9.33
Virginia	92,039	772,963	8.40	15,594	99,479	6.38
West Virginia	109,166	582,985	5.34	52,556	367,642	7.00
Wisconsin	576,019	4,294,229	7.46	553,496	4,179,690	7.55
All other states[1]	152,023	1,042,134	6.86	38,916	183,547	4.72

STATE.	WOOD CONSUMED IN MANUFACTURE OF WOOD PULP—continued.					
	Peeled.			Rossed.		
	Quantity (cords).	Cost.	Average cost per cord.	Quantity (cords).	Cost.	Average cost per cord.
United States	1,413,997	$12,169,393	$8.61	368,527	$4,699,411	$12.75
Maine	219,698	1,856,333	8.45	71,067	974,553	13.71
Massachusetts	10,679	94,527	8.85	7,636	110,569	14.48
Michigan	34,031	221,232	6.50	1,639	15,182	9.26
Minnesota						
New Hampshire	259,164	2,609,015	10.07			
New York	254,528	2,631,409	10.34	236,503	3,102,831	13.12
North Carolina	34,465	238,483	6.92			
Ohio	29,901	290,842	9.73			
Oregon	86,256	701,601	8.13			
Pennsylvania	230,542	1,739,724	7.55	3,000	36,000	12.00
Vermont	32,137	354,284	11.02	2,593	30,266	11.67
Virginia	30,356	243,474	8.02	46,089	430,010	9.33
West Virginia	56,610	215,343	3.80			
Wisconsin	22,523	114,539	5.09			
All other states[1]	113,107	858,587	7.59			

[1] Includes California, Delaware, Maryland, South Carolina, Texas, and Washington.

Of the total quantity of wood used, 55.5 per cent was received at the mill in a rough condition, 35.3 per cent was peeled, and the remaining 9.2 per cent rossed. The average cost per cord of the peeled wood was 67 cents more than for the rough, and $4.13 less than for the rossed. Rossed wood came in that condition to the mill in only seven states, of which New York, Maine, and Virginia, ranking in the order named, together used 353,659 cords, or 96 per cent. Rough wood was used in all the states named separately, but in only four—Maine, Wisconsin, New York, and North Carolina—did the quantity exceed 100,000 cords. The highest average cost per cord for rough wood, $9.33, was reported for Vermont, although the amount was but slightly greater than the corresponding figures for New York and Maine; the lowest average cost, $5.39, was reported for Oregon. Four states—New Hampshire, New York, Pennsylvania, and Maine—ranking in the order named, each reported over 200,000 cords of wood already peeled. No peeled wood was delivered at the mills in Minnesota. For peeled wood the highest average cost per cord was $11.02 in Vermont and the lowest $3.80 in West Virginia.

The quantity, cost, and average cost per cord of the wood consumed, according to the condition in which it was received at the mill, are given by kind of wood in Table 6.

Over three-fourths of the domestic spruce was received rough at the mill, while less than one-third of the imported spruce was in this form. The reason for the small proportion of the latter received in the rough lies principally in the fact that the weight of the bark, which is of no value for pulp, adds greatly to the freight rates. The proportion of the imported spruce received in a peeled condition was 40.2 per cent and that rossed 28.3 per cent.

Nearly 95 per cent of the poplar, the greater part of the pine, balsam, and miscellaneous wood, and all the beech, were received at the mill in a peeled form. On the other hand, nearly 65 per cent of the hemlock, and over two-thirds of the white fir and of the slabs and other mill waste were received rough. The only kinds of wood of which any quantity was rossed before arrival at the mill were spruce, both domestic and imported, hemlock, balsam, and a small amount of pine.

Of the varieties of wood received rough, imported spruce had the highest cost per cord, $9.88; and slabs and other mill waste, at $4.86, and pine and white fir, each at $5.12 per cord, showed the lowest prices. Slabs and other mill waste, at $4.01 per cord, and imported spruce, at $11.04, had the lowest and highest costs per cord, respectively, of the peeled wood. The cost of the rossed wood varied only from an average per cord of $11.75 for domestic spruce to one of $13.40 for imported spruce, with the exception of a rate of $6 per cord paid for a very small quantity of rossed pine.

TABLE 6.—*Pulp-wood consumption—Quantity and cost of wood consumed, according to condition in which received at the mill, with average cost per cord, by kinds of wood: 1909.*

KIND OF WOOD.	WOOD CONSUMED IN MANUFACTURE OF WOOD PULP.											
	Total.			Rough.			Peeled.			Rossed.		
	Quantity (cords).	Cost.	Average cost per cord.	Quantity (cords).	Cost.	Average cost per cord.	Quantity (cords).	Cost.	Average cost per cord.	Quantity (cords).	Cost.	Average cost per cord.
Total	4,001,607	$34,477,540	$8.62	2,219,083	$17,608,736	$7.94	1,413,997	$12,169,393	$8.61	368,527	$4,699,411	$12.75
Spruce, domestic	1,653,249	15,400,341	9.32	1,244,105	11,122,073	8.94	275,749	2,711,219	9.83	133,395	1,567,049	11.75
Spruce, imported	768,332	8,715,892	11.34	242,092	2,392,004	9.88	308,524	3,406,123	11.04	217,716	2,917,765	13.40
Hemlock	559,657	3,524,715	6.30	362,416	2,166,527	5.98	186,654	1,227,704	6.58	10,587	130,484	12.31
Poplar, domestic	302,876	2,410,016	7.96	13,953	72,555	5.20	288,923	2,337,461	8.09			
Poplar, imported	25,622	203,488	7.94	2,984	24,469	8.20	22,638	179,019	7.91			
Balsam	95,366	789,505	8.28	37,544	199,461	5.31	51,051	506,279	9.92	6,771	83,765	12.37
Pine	90,885	568,452	6.25	17,294	88,468	5.12	73,533	479,636	6.52	58	348	6.00
White fir	37,176	198,365	5.34	25,616	131,248	5.12	11,560	67,117	5.81			
Beech	31,390	226,168	7.21				31,390	226,168	7.21			
All other species	188,077	1,281,541	6.81	83,502	490,909	5.88	104,575	790,632	7.56			
Slabs and other mill waste	248,977	1,159,057	4.66	189,577	921,022	4.86	59,400	238,035	4.01			

IMPORTS AND EXPORTS.

Table 7 shows the quantity and value of the wood pulp imported each year since 1906. These figures are taken from the reports of the Bureau of Statistics of the Department of Commerce and Labor and apply to the fiscal years ending June 30. The quantities are reduced to short tons of 2,000 pounds, and the values are "the actual market or wholesale prices at the time of exportation to the United States, in the principal markets of the country from whence exported." The total quantity imported into the United States in the year ending June 30, 1910, was 423,721 tons, or 17 per cent of the quantity manufactured in this country during the calendar year 1909.

TABLE 7.—*Pulp-wood consumption—Quantity and value of wood pulp imported: 1906 to 1910.*[1]

	1910	1909	1908	1907	1906
Total:					
Quantity (tons, 2,000 pounds)	423,721	307,123	266,016	238,683	176,091
Value	$11,768,014	$8,629,263	$7,313,326	$6,348,857	$4,584,942
Average value per ton	$27.77	$28.10	$27.49	$26.60	$26.04
Imported from Europe:					
Quantity (tons, 2,000 pounds)	217,439	142,709	103,773	70,877	45,882
Per cent of total	51	46	39	30	26
Value	$7,541,454	$5,221,548	$4,115,103	$3,118,585	$2,081,580
Average value per ton	$34.69	$36.59	$39.65	$44.00	$45.37
Imported from North American countries:					
Quantity (tons, 2,000 pounds)	206,282	164,414	162,243	167,806	130,209
Per cent of total	49	54	61	70	74
Value	$4,226,560	$3,407,715	$3,198,223	$3,230,272	$2,503,362
Average value per ton	$20.49	$20.72	$19.71	$19.25	$19.22

Fiscal years ending June 30.

The total imports and the average value per ton have increased from year to year with but slight exceptions. The quantity imported in 1910 was over 116,000 tons greater than that in 1909, and nearly two and one-half times as much as in 1906. The value of the wood pulp imported in 1910 was over $11,768,000, or more than $3,138,000 in excess of that imported the year before. For the first time more than one-half of the imports of wood pulp came from Europe. In both quantity and total value these European imports have been constantly increasing; but the average value per ton has declined almost as constantly, being $34.69 per ton in 1910, as compared with $45.37 per ton in 1906. This reduction in value is due probably to the composition and grade of the imports of wood pulp, that is, to the proportions of the mechanical, unbleached chemical, and bleached chemical included under the general term "wood pulp." Previous to the fiscal year 1909, the distinction according to grade was shown by the Bureau of Statistics only in the table entitled "Imports for Consumption;" but beginning with that year the classification has been made also in the table of general imports. At present about 44 per cent of the total quantity is unbleached chemical pulp, from 38 per cent to 42 per cent mechanical pulp, and the balance is bleached chemical pulp. No data as to the kinds of wood used in the manufacture of this pulp are given by the Bureau of Statistics.

In 1909 over 95 per cent of the mechanical pulp came from Canada, while Europe supplied 72 and 94 per cent, respectively, of the unbleached and bleached chemical pulp. In 1910 nearly one-half of the mechanical pulp was entered free of duty from countries not imposing an export duty.

The European imports came principally from Germany, Sweden, and Norway, and practically all the imports from North America were from Canada.

The exports of wood pulp are small and the quantity has been decreasing for several years. From 19,174 tons in 1902, the quantity has declined to 8,649 tons in the fiscal year 1910. France, Belgium, and the United Kingdom are the principal countries purchasing this material from the United States.

TANBARK AND TANNING EXTRACT.

The statistics of the consumption of vegetable tanning materials, which have been collected annually by correspondence since 1905, were supplemented in 1909 by the returns from the schedules of the regular decennial census. While this resulted in very complete returns in the latter year, it also caused a slight delay in compiling the figures.

The reported consumption of vegetable tanning materials in 1909 amounted to 1,078,910 tons of bark, wood, etc., valued at $11,125,750, and 386,817,895 pounds of extract costing $10,779,177. The total cost, $21,904,927, reported by 592 establishments, was an increase of $543,208 over that reported by 622 establishments in 1908, and of $699,380 over that reported by 583 establishments in 1907.

Comparison of the consumption of the various kinds of tanning materials in 1907, 1908, and 1909 is given in Table 1. Quantities of bark, wood, and nuts are expressed in short tons.

Table 1.—*Tanbark and tanning extract—Quantity and cost of tanning materials consumed, by kinds: 1909, 1908, and 1907.*

KIND.	TANBARK, WOOD, ETC.					
	1909		1908		1907	
	Quantity (tons).	Cost.	Quantity (tons).	Cost.	Quantity (tons).	Cost.
Total	1,078,910	$11,125,750	1,127,400	$10,803,437	1,214,401	$11,555,874
Hemlock bark	698,365	6,434,848	810,231	7,203,206	815,840	7,016,915
Oak bark	324,070	3,533,862	307,817	3,325,908	374,052	3,933,038
Mangrove bark	18,925	514,169				
Chestnut wood	18,527	65,152				
Myrobalan nuts	18,000	534,727				
All other	1,023	42,992	9,352	274,323	24,509	605,921

KIND.	EXTRACT.					
	1909		1908		1907	
	Quantity (pounds).	Cost.	Quantity (pounds).	Cost.	Quantity (pounds).	Cost.
Total	386,817,895	$10,779,177	392,101,087	$10,558,282	364,899,535	$9,649,673
Hemlock bark	10,862,540	276,436	40,808,723	1,043,311	40,133,524	968,041
Oak bark	36,930,861	703,805	21,705,775	460,124	30,830,291	639,938
Mangrove bark	1,401,008	43,566				
Chestnut wood	184,307,498	3,613,344	146,818,963	2,853,045	134,819,100	2,560,007
Myrobalan nuts	1,101,303	37,571				
Quebracho	147,109,443	5,877,989	143,174,614	4,934,475	145,324,677	4,995,807
Gambier	2,641,001	133,765				
Quermos	1,084,174	43,757				
Sumac	350,535	16,167				
Valonia	243,536	18,022				
All other	785,996	14,755	39,593,012	1,267,327	13,791,943	485,880

The quantity of tanbark, wood, etc., reported has been decreasing steadily from year to year, the consumption in 1909 being 135,491 tons, or 11.2 per cent less than in 1907. This decline was due principally to the decrease in the use of hemlock bark.

The quantity of extract used in 1909, 386,817,895 pounds, was 5,283,192 pounds less than in 1908, though it was 21,918,360 pounds more than in 1907. This gain since 1907 was due chiefly to the great increase in the use of tanning extract made from chestnut wood.

While five years ago approximately two-thirds of the active tanneries used vegetable tanning materials, it is probable that at present the proportion is not greater than one-half, owing to the increasing use of chemical tanning materials.

The number of establishments that used extract exclusively in 1909 was 138, compared with 164 in 1908 and 122 in 1907. The number that used bark exclusively in 1909 was 117, compared with 125 in 1908 and 121 in 1907, while the number using both bark and extract in 1909 was 337, compared with 333 in 1908 and 340 in 1907. The consumption of bark, wood, etc., per establishment in 1909 was 86 tons less than in 1908 and 258 tons less than in 1907. The consumption of extract per establishment in 1909 was 25,417 pounds more than in 1908 and 24,527 pounds more than in 1907.

A number of items are shown separately for the first time in 1909, both among the crude tanning materials and among the extracts. In the former class are mangrove bark, chestnut wood, and myrobalan nuts. The three tanning materials named together represent 5.1 per cent of the total quantity of bark, wood, etc., consumed in 1909, and 10 per cent of the total value. Hemlock bark formed 64.7 per cent of the total quantity in 1909, compared with 71.9 per cent in 1908 and 67.2 per cent in 1907, while oak bark formed 30 per cent in 1909, compared with 27.3 per cent in 1908 and 30.8 per cent in 1907.

Of the extracts used in 1909, chestnut and quebracho were by far the most important, amounting together to 331,416,941 pounds, or 85.7 per cent of the total quantity and 88.1 per cent of the total cost, as compared with 74 per cent of the quantity in 1908 and 73.8 per cent of the total cost of tanning extract consumed in that year. Oak extract, which represented 9.5 per cent of the total quantity of extract consumed in 1909, showed a considerable increase over the amount used in 1908, while hemlock extract showed a great decrease from the quantities used in both 1908 and 1907. Six kinds of extract are shown separately for the first time in 1909, of which gambier was the most important in both quantity and cost. These six kinds of extract, however, together contributed only 1.8 per cent of the total quantity of extract used during the year.

TANBARK, WOOD, ETC.

While the consumption of vegetable tanning materials is reported from 33 states the use of bark for tanning is reported from but 25, of which Pennsylvania, Wisconsin, West Virginia, Michigan, and Virginia, ranking in the order named, together reported a consumption of 741,848 tons, or 68.8 per cent of the total.

Table 2 shows the quantity and cost of the tanbark, wood, nuts, etc., used for tanning in 1909, by states.

TABLE 2.—*Tanbark and tanning extract—Quantity and cost of tanbark, wood, nuts, etc., by kinds and by states: 1909.*

STATE.	TOTAL.		
	Quantity (tons).	Cost.	Average cost per ton.
United States	1,078,910	$11,125,750	$10.31
Alabama	178	1,511	8.49
California	37,120	744,768	20.06
Georgia	5,290	52,112	9.85
Illinois	16,109	167,926	10.42
Indiana	7,668	84,776	11.06
Kentucky	16,905	177,839	10.52
Maine	12,933	106,513	8.24
Maryland	12,784	132,958	10.40
Massachusetts	28,426	318,133	11.19
Michigan	100,285	1,225,655	12.22
Missouri	4,183	$57,379	$13.72
New Jersey	10,368	157,425	15.18
New York	81,711	816,885	10.00
North Carolina	50,683	445,621	8.79
Ohio	19,626	229,562	11.70
Oregon	2,070	34,566	16.70
Pennsylvania	310,279	2,997,026	9.66
Tennessee	25,438	223,247	8.78
Virginia	89,580	871,853	9.73
West Virginia	115,689	975,682	8.43
Wisconsin	126,015	1,252,434	9.94
All other states[1]	5,570	51,879	9.31

STATE.	HEMLOCK BARK.			OAK BARK.		
	Quantity (tons).	Cost.	Average cost per ton.	Quantity (tons).	Cost.	Average cost per ton.
United States	698,365	$6,434,848	$9.21	324,070	$3,533,862	$10.90
Alabama				176	1,434	8.15
California				36,005	714,146	19.83
Georgia				5,278	51,742	9.80
Illinois	16,028	165,325	10.31			
Indiana	479	5,290	11.04	7,189	79,486	11.06
Kentucky	1,046	10,231	9.78	15,636	160,030	10.23
Maine	12,808	103,263	8.06			
Maryland	520	4,085	7.86	11,731	113,365	9.66
Massachusetts	26,889	266,865	9.92	413	6,183	14.97
Michigan	88,061	843,706	9.58			
Missouri	1,103	14,339	13.00	3,063	42,882	14.00
New Jersey	288	3,686	12.80	10,077	153.634	15.25
New York	76,774	704,430	9.18	867	9,721	11.21
North Carolina	1,039	8,715	8.39	43,820	395,900	9.03
Ohio	5,924	69,682	11.76	13,382	150,815	11.27
Oregon	1,071	14,371	13.42	974	20,070	20.61
Pennsylvania	254,434	2,346,130	9.22	35.108	333,679	9.50
Tennessee	1,193	9,505	7.97	23,843	200,396	8.40
Virginia	3,880	32,842	8.46	83,648	813,763	9.73
West Virginia	77,661	602,599	7.76	32,746	284,600	8.69
Wisconsin	123,763	1,183.179	9.56			
All other states[1]	5,404	46,605	8.62	114	2,016	17.68

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[1] Includes Connecticut, New Hampshire, Vermont, and Washington.

TABLE 2.—*Tanbark and tanning extract—Quantity and cost of tanbark, wood, nuts, etc., by kinds and by states: 1909*—Continued.

STATE.	MANGROVE BARK.			CHESTNUT WOOD.		
	Quantity (tons).	Cost.	Average cost per ton.	Quantity (tons).	Cost.	Average cost per ton.
United States	18,925	$514,169	$27.17	18,527	$65,152	$3.52
Alabama	2	77	38.50	....	....	....
California	....	....	....	....	....	....
Georgia	....	....	....	....	....	....
Illinois	61	1,989	32.61	....	....	....
Indiana	....	....	....	....	....	....
Kentucky	....	....	....	....	....	....
Maine	....	....	....	....	....	....
Maryland	....	....	....	....	....	....
Massachusetts	479	14,656	30.60	2	6	3.00
Michigan	7,780	246,029	31.62	....	....	....
Missouri	....	....	....	15	60	4.00
New Jersey	....	....	....	....	....	....
New York	2,737	62,422	22.81	....	....	....
North Carolina	....	....	....	5,343	25,229	4.72
Ohio	....	....	....	20	200	10.00
Oregon	....	....	....	....	....	....
Pennsylvania	7,297	171,753	23.54	9,311	28,147	3.02
Tennessee	....	....	....	....	....	....
Virginia	....	....	....	1,322	3,966	3.00
West Virginia	491	14,950	30.45	2,512	7,536	3.00
Wisconsin	78	2,293	29.40	....	....	....
All other states[1]	....	....	....	2	8	4.00

STATE.	MYROBALAN NUTS.			ALL OTHER.		
	Quantity (tons).	Cost.	Average cost per ton.	Quantity (tons).	Cost.	Average cost per ton.
United States	18,000	$534,727	$29.71	1,023	$42,992	$42.03
Alabama	....	....	....	....	....	....
California	620	20,470	33.02	495	10,152	20.51
Georgia	12	370	30.83	....	....	....
Illinois	20	612	30.60	....	....	....
Indiana	....	....	....	....	....	....
Kentucky	205	6,750	32.93	18	828	46.00
Maine	125	3,250	26.00	....	....	....
Maryland	515	14,626	28.40	18	882	49.00
Massachusetts	348	9,796	28.15	295	20,627	69.92
Michigan	4,402	133,936	30.43	42	1,984	47.24
Missouri	2	98	49.00	....	....	....
New Jersey	3	105	35.00	....	....	....
New York	1,293	37,712	29.17	40	2,600	65.00
North Carolina	481	15,777	32.80	....	....	....
Ohio	300	8,865	29.55	....	....	....
Oregon	....	....	....	25	125	5.00
Pennsylvania	4,089	114,773	28.07	40	2,544	63.60
Tennessee	402	13,346	33.20	....	....	....
Virginia	730	21,282	29.15	....	....	....
West Virginia	2,279	65,997	28.96	....	....	....
Wisconsin	2,174	66,962	30.80	....	....	....
All other states[1]	....	....	....	50	3,250	65.00

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[1] Includes Connecticut, New Hampshire, Vermont, and Washington.

The average cost per ton in 1909, $10.31, was 73 cents more than in 1908. The highest average cost per ton was reported by California, $20.06, which was $1.39 less than in 1908. The next highest, $16.70, was reported from Oregon, while Maine reported the lowest cost, $8.24. The lowest cost in 1908, $7.62, was reported from Vermont, which in 1909 was included in "All other states."

In the total quantity of bark, wood, etc., used in 1909, 11 out of the 21 states for which figures are shown separately for that year showed gains over 1908, the greatest being 9,605 tons in California. Of the 10 states which showed decreases, Wisconsin and Pennsylvania, the two leading states in both years, were the heaviest losers, reporting decreases of over 21,000 tons each.

Hemlock bark, which in 1909 had the lowest average cost of any of the barks used for tanning, was used principally in Pennsylvania, Wisconsin, Michigan, West Virginia, and New York, these five states, ranking in the order named, consuming 620,693 tons, valued at $5,680,044, which represented 88.9 per cent of the total quantity and 88.3 per cent of the total value. The average cost per ton in four of these five states was remarkably uniform, while West Virginia showed a cost of only $7.76, the lowest average cost reported for hemlock bark by any state. The highest average cost, $13.42, was reported from Oregon.

Oak bark was reported from a large number of states, of which Virginia, North Carolina, California, Pennsylvania, and West Virginia, ranking in the order named, each reported more than 32,000 tons. The aggregate consumption of oak bark by these five states formed 71.4 per cent of the total quantity used. The highest average cost per ton, $20.61, was reported from Oregon, though California reported a cost nearly as great, $19.83. Whereas the oak bark used in the eastern United States is generally chestnut oak (*Quercus prinus*), the oak bark used on the Pacific slope is derived principally from the tanbark oak (*Quercus densiflora*). The lowest average cost of oak bark reported was for Alabama, $8.15, and the next lowest for Tennessee, $8.40.

The consumption of mangrove bark was reported from eight states, only three of which, however, reported more than 2,700 tons. Michigan, Pennsylvania, and New York, ranking in the order named, together reported 17,814 tons, or 94.1 per cent, of all mangrove bark used. Mangrove is native to the tropical marshes of both hemispheres, but is imported largely from the West Indies and Portuguese Africa, and from Germany by reshipment.

Chestnut wood is used largely in the manufacture of tanning extract. Some establishments purchase the extract already made, and others manufacture the extract used in their own plants directly from the wood. To this latter custom is due the report in 1909 of 18,527 tons of chestnut wood, nearly four-fifths of which was consumed in Pennsylvania and North Carolina.

Myrobalan nuts are entirely an imported product. Michigan, Pennsylvania, West Virginia, Wisconsin, and New York, ranking in the order named, and each reporting more than 1,200 tons, together consumed 14,237 tons, or 79.1 per cent of the total. Of the states above named, Wisconsin reported the highest average cost, $30.80, while Pennsylvania reported the lowest, $28.07.

A small quantity of miscellaneous kinds of bark, etc., was reported in 1909, chiefly from California and Massachusetts, and is included in the table under the heading "All other." A large part of this class was sumac and tamarack bark.

TANNING EXTRACT.

Most extracts made of vegetable materials used for the tanning of hides are purchased in two principal forms, solid and liquid. In addition to this the same kind of extract often varies greatly in its content of tannin, depending on the manufacturer and the quality of material from which it is made. No information was requested in 1909 or previously with regard to the strength of the extract bought or used. The majority of the establishments which manufacture extract for tanning are located in Pennsylvania, Virginia, West Virginia, North Carolina, and Tennessee. The cost of transporting an extract having a low content of tannin over a long distance may make the average cost per pound greater than that of an extract having a higher content of tannin which is transported a relatively short distance. These facts must be considered in connection with the value per pound given in the table.

The use of tanning extract was reported in 1909 from 33 states, the total number reporting the consumption of vegetable tanning materials. In Table 3 the consumption of extract is shown separately for the 22 states each of which reported at least three tanneries consuming vegetable tanning materials.

TABLE 3.—*Tanbark and tanning extract—Quantity and cost of tanning extract, by kinds and by states: 1909.*

STATE.	TOTAL.		QUEBRACHO.		
	Quantity (pounds).	Cost.	Quantity (pounds).	Cost.	Average cost per pound.
United States	386,817,895	$10,779,177	147,109,443	$5,877,989	$0.040
Alabama	131,000	6,122	131,000	6,122	0.047
California	3,299,121	160,731	1,558,333	84,340	0.054
Georgia	2,877,160	85,924	1,416,689	59,608	0.042
Illinois	4,584,573	144,433	2,871,976	100,446	0.035
Indiana	7,710,009	166,370	1,096,402	41,132	0.038
Kentucky	18,695,512	397,616	2,796,993	120,817	0.043
Maine	5,583,400	100,033	93,000	2,835	0.030
Maryland	4,370,843	106,663	971,516	40,351	0.042
Massachusetts	28,154,770	823,205	11,425,297	454,525	0.040
Michigan	23,608,343	752,387	12,670,848	555,493	0.044
Minnesota	957,435	27,061	269,315	11,820	0.044
Missouri	1,298,767	41,631	626,159	29,177	0.047
New Jersey	18,509,877	526,628	10,874,036	347,262	0.032
New York	30,995,721	991,366	17,589,506	696,896	0.040
North Carolina	19,948,938	326,284	1,816,223	65,399	0.036
Ohio	14,795,808	397,157	5,089,466	217,069	0.043
Oregon	33,000	1,695	33,000	1,695	0.051
Pennsylvania	124,742,847	3,665,942	47,737,935	1,894,669	0.040
Tennessee	4,962,060	94,429	687,385	30,142	0.044
Virginia	17,312,689	277,498	1,397,060	48,938	0.035
West Virginia	27,653,815	857,068	12,768,204	530,243	0.042
Wisconsin	23,595,933	725,131	11,715,941	476,546	0.041
All other states [1]	2,996,274	103,803	1,473,159	62,464	0.042

STATE.	CHESTNUT.			OAK.		
	Quantity (pounds).	Cost.	Average cost per pound.	Quantity (pounds).	Cost.	Average cost per pound.
United States	182,818,961	$3,579,929	$0.020	38,419,398	$737,220	$0.019
Alabama	....	....	....	....	....	....
California	170,370	7,332	0.043	1,329,503	56,623	0.043
Georgia	1,295,071	20,873	0.016	400	8	0.020
Illinois	130,388	2,761	0.021	787,880	14,069	0.018
Indiana	4,328,520	68,026	0.016	705,630	12,352	0.018
Kentucky	8,988,739	150,776	0.017	6,486,368	113,577	0.018
Maine	4,903,000	81,217	0.017	180,000	3,780	0.021
Maryland	1,633,056	36,097	0.022	1,765,271	30,186	0.017
Massachusetts	8,537,901	142,767	0.017	3,189,631	67,554	0.021
Michigan	6,839,363	113,796	0.017	1,179,507	17,393	0.015
Minnesota	1,000	32	0.032	604,120	12,816	0.021
Missouri	102,420	1,996	0.019	569,188	10,418	0.018
New Jersey	2,809,928	57,007	0.020	3,853,265	95,257	0.025
New York	11,951,965	245,511	0.021	165,922	3,714	0.022
North Carolina	18,072,965	258,947	0.014	....	....	....
Ohio	2,091,503	35,715	0.017	6,716,214	116,882	0.017
Oregon	....	....	....	....	....	....
Pennsylvania	69,527,427	1,617,684	0.023	5,825,176	95,583	0.016
Tennessee	4,255,251	63,588	0.015	....	....	....
Virginia	12,176,061	171,945	0.014	3,697,700	55,778	0.015
West Virginia	14,745,548	322,778	0.022	105,000	2,375	0.023
Wisconsin	9,883,385	174,381	0.018	707,819	13,741	0.019
All other states [1]	375,100	6,700	0.018	550,804	15,114	0.027

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[1] Includes Colorado, Connecticut, Delaware, Iowa, Louisiana, New Hampshire, North Dakota, South Dakota, Texas, Vermont, and Washington.

TABLE 3.—*Tanbark and tanning extract—Quantity and cost of tanning extract, by kinds and by states: 1909*—Continued.

STATE.	HEMLOCK.			GAMBIER.		
	Quantity (pounds).	Cost.	Average cost per pound.	Quantity (pounds).	Cost.	Average cost per pound.
United States	10,862,540	$276,436	$0.025	2,641,001	$133,765	$0.051
Alabama						
California	12,600	454	0.036	92,680	5,295	0.057
Georgia	150,000	4,875	0.032			
Illinois	244,776	6,616	0.027	344,959	16,213	0.047
Indiana	1,501,501	41,247	0.027			
Kentucky	359,912	9,892	0.027			
Maine	50,700	1,601	0.032	6,200	410	0.066
Maryland						
Massachusetts	2,617,499	70,124	0.027	650,665	32,622	0.050
Michigan	2,643,814	56,171	0.021	11,266	748	0.066
Minnesota	83,000	2,393	0.029			
Missouri	1,000	40	0.040			
New Jersey	619,581	12,587	0.020	44,522	3,461	0.078
New York	831,389	23,004	0.028	274,998	14,201	0.052
North Carolina				6,000	420	0.070
Ohio	639,995	18,701	0.029	1,722	77	0.045
Oregon						
Pennsylvania	625,002	16,052	0.026	94,563	4,567	0.048
Tennessee						
Virginia						
West Virginia				400	26	0.065
Wisconsin	128,191	3,542	0.028	1,087,011	53,834	0.050
All other states [1]	353,580	9,137	0.026	26,015	1,891	0.073

STATE.	QUERMOS.			MANGROVE.		
	Quantity (pounds).	Cost.	Average cost per pound.	Quantity (pounds).	Cost.	Average cost per pound.
United States	1,084,174	$43,757	$0.040	1,401,008	$43,566	$0.031
Alabama						
California	2,000	100	0.050	58,155	2,879	0.050
Georgia						
Illinois				38,466	1,491	0.039
Indiana	17,956	763	0.042			
Kentucky	13,500	554	0.041			
Maine	500	20	0.040	230,000	8,970	0.039
Maryland						
Massachusetts	550,483	21,890	0.040	1,069,387	29,938	0.028
Michigan						
Minnesota						
Missouri						
New Jersey	197,584	7,816	0.040			
New York	12,200	527	0.043			
North Carolina						
Ohio	113,720	4,833	0.042			
Oregon						
Pennsylvania						
Tennessee						
Virginia						
West Virginia						
Wisconsin						
All other states [1]	176,231	7,254	0.041	5,000	288	0.058

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[1] Includes Colorado, Connecticut, Delaware, Iowa, Louisiana, New Hampshire, North Dakota, South Dakota, Texas, Vermont, and Washington.

Table 3.—*Tanbark and tanning extract—Quantity and cost of tanning extract, by kinds and by states: 1909*—Continued.

STATE.	MYROBALAN. Quantity (pounds).	MYROBALAN. Cost.	MYROBALAN. Average cost per pound.	VALONIA. Quantity (pounds).	VALONIA. Cost.	VALONIA. Average cost per pound.
United States	1,101,303	$37,571	$0.034	243,536	$18,022	$0.074
Alabama	....	....	....	....	....	....
California	13,500	676	0.050	....	....	....
Georgia	15,000	560	0.037	....	....	....
Illinois	13,500	549	0.041	....	....	....
Indiana	60,000	2,850	0.048	....	....	....
Kentucky	....	....	....	....	....	....
Maine	....	....	....	....	....	....
Maryland	1,000	29	0.029	....	....	....
Massachusetts	47,542	1,373	0.029	....	....	....
Michigan	156,024	6,580	0.042	....	....	....
Minnesota	....	....	....	....	....	....
Missouri	....	....	....	....	....	....
New Jersey	5,961	191	0.032	....	....	....
New York	6,450	256	0.040	....	....	....
North Carolina	53,150	1,509	0.028	....	....	....
Ohio	77,433	3,040	0.039	....	....	....
Oregon	....	....	....	....	....	....
Pennsylvania	498,534	14,726	0.030	243,536	18,022	0.074
Tennessee	19,424	699	0.036	....	....	....
Virginia	41,868	837	0.020	....	....	....
West Virginia	....	....	....	....	....	....
Wisconsin	63,992	2,848	0.045	....	....	....
All other states [1]	27,925	848	0.030	....	....	....

STATE.	SUMAC. Quantity (pounds).	SUMAC. Cost.	SUMAC. Average cost per pound.	ALL OTHER. Quantity (pounds).	ALL OTHER. Cost.	ALL OTHER. Average cost per pound.
United States	350,535	$16,167	$0.046	785,996	$14,755	$0.019
Alabama	....	....	....	....	....	....
California	55,480	2,707	0.049	6,500	325	0.050
Georgia	....	....	....	....	....	....
Illinois	....	....	....	152,628	2,288	0.015
Indiana	....	....	....	....	....	....
Kentucky	50,000	2,000	0.040	....	....	....
Maine	....	....	....	120,000	1,200	0.010
Maryland	....	....	....	....	....	....
Massachusetts	28,195	2,008	0.071	38,170	404	0.011
Michigan	....	....	....	107,521	2,206	0.021
Minnesota	....	....	....	....	....	....
Missouri	....	....	....	....	....	....
New Jersey	105,000	3,047	0.029	....	....	....
New York	111,860	6,405	0.057	51,431	852	0.017
North Carolina	....	....	....	600	9	0.015
Ohio	....	....	....	65,755	840	0.013
Oregon	....	....	....	....	....	....
Pennsylvania	....	....	....	190,674	4,639	0.024
Tennessee	....	....	....	....	....	....
Virginia	....	....	....	....	....	....
West Virginia	....	....	....	34,663	1,646	0.047
Wisconsin	....	....	....	9,594	239	0.025
All other states [1]	....	....	....	8,460	107	0.013

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[1] Includes Colorado, Connecticut, Delaware, Iowa, Louisiana, New Hampshire, North Dakota, South Dakota, Texas, Vermont, and Washington.

In 1909, as in 1908, Pennsylvania was the leading state in the consumption of tanning extract, reporting in the later year 32.2 per cent of the total quantity. No other state reported as much as 8 per cent, though there were ten states in addition to Pennsylvania which reported more than 10,000,000 pounds each.

Of the ten kinds of extract shown separately, at least six were made in whole or in part from imported material.

Quebracho extract formed 38 per cent of the total quantity of extract consumed and its cost constituted 54.5 per cent of the total cost of the extract used, while chestnut extract formed 47.3 per cent of the total quantity and its cost constituted 33.2 per cent of the total cost. Oak extract ranked third, with less than 10 per cent of the total quantity.

Quebracho extract was used in more states than any other extract, fifteen states using each more than 1,000,000 pounds. In 1909 Pennsylvania led in the quantity consumed, with 32.5 per cent of the total for the country, and was followed by New York with 12 per cent, West Virginia with 8.7 per cent, and Michigan with 8.6 per cent. The highest cost per pound was reported from Oregon and the lowest from Maine.

Chestnut extract is made from chestnut wood by about 15 or 20 establishments in the United States. In 1909 this extract was used principally in Pennsylvania, North Carolina, West Virginia, Virginia, and New York, each of these five states consuming over 11,000,000 pounds. The average cost of this extract ranged from $0.014 per pound in Virginia and North Carolina to $0.043 per pound in California.

Oak extract was used principally in Ohio, Kentucky, and Pennsylvania, these three states reporting a consumption of 19,027,758 pounds, or nearly one-half of the entire consumption. In addition to these three states, however, over 1,000,000 pounds were used in each of six other states. The average cost per pound ranged from $0.043 in California to $0.015 in Virginia and in Michigan.

In 1909 Michigan, Massachusetts, and Indiana, ranking in the order named, reported 6,762,814 pounds of hemlock extract, or 62.3 per cent of all hemlock extract consumed. The average cost per pound was greatest in Missouri, $0.04, and lowest in New Jersey, $0.02.

Gambier extract, which prior to 1909 was included under "All other," was used in only about one-half of the states for which figures are shown separately. The greatest amounts were consumed in Wisconsin and Massachusetts. This extract is often given the name "cutch," which term is, however, also improperly applied to extracts made from other imported material. The average cost of this extract in 1909 was greater than for any other kind of extract except valonia. The highest cost per pound, $0.078, was reported from New Jersey, while the lowest, $0.045, was reported from Ohio.

Quermos is the trade name for a blended or "mixed" extract. Over one-half of this extract was used in Massachusetts, where it cost $0.04 per pound. More than three-fourths of the total quantity of the mangrove extract was also used in Massachusetts, while myrobalan extract was consumed chiefly in Pennsylvania and Michigan, nearly 655,000 pounds, or 59.4 per cent of the total quantity consumed, being reported from these two states. Valonia, which is an extract made from the acorn cups of certain foreign oaks, was used entirely in Pennsylvania. The solid form of this extract is said to contain 58 per cent of tannin.

Sumac extract is manufactured largely from imported material and was used in 1909 principally in New York and New Jersey.

IMPORTS FOR CONSUMPTION.

Table 4 gives a comparison of the quantities and values of tanning materials imported for consumption and withdrawn from warehouses for consumption in the United States during the fiscal years ending June 30, 1907 to 1910, inclusive.

The number of items shown in this table is considerably larger than that shown in the corresponding statistics for previous years. While it is true that a portion of the imports here shown are used in the manufacture of dyes, it is believed that the greater part of each commodity listed is consumed in the tanning industry.

The total value of the imports has increased greatly during the four-year period for which figures are shown, although a temporary decline is disclosed for 1908. With few exceptions the quantities also have increased, especially in the case of quebracho wood and extract. An interesting feature of the figures for 1910 is the separation for tariff purposes of quebracho extract into two classes according to the density or percentage of tannin content.

TABLE 4.—*Tanbark and tanning extract—Tanning materials imported for consumption by fiscal years: 1907 to 1910.*

[Compiled from "Commerce and Navigation of the United States," Bureau of Statistics, Department of Commerce and Labor.]

KIND.	1910		1909	
	Quantity.	Value.	Quantity.	Value.
Total		$6,783,939		$6,094,357
Bark, wood, nuts, etc.:				
Hemlock bark, cords	16,346	95,667	20,312	126,559
Mangrove bark, tons	17,088	402,853	12,263	250,409
Quebracho wood, tons	80,210	1,058,647	66,093	731,795
Myrobalan nuts, pounds	55,445,896	484,570	42,667,676	441,584
Gambier, pounds	25,808,720	1,264,023	31,000,855	1,313,990
Sumac, ground, pounds	12,605,164	280,404	10,976,481	291,562
Sumac, unmanufactured, pounds	1,003,553	24,929	558,109	20,617
Valonia		122,319		22,019
All other		99,599		156,630
Extract:				
Quebracho, pounds			99,108,284	2,685,021
Quebracho:				
Less in density than 28° Baumé	34,510,310	978,411		
Exceeding in density 28° Baumé	55,982,266	1,879,508		
Sumac, pounds	1,461,373	54,899	1,232,830	54,171
Hemlock, pounds	32,101	791		
All other bark extract, pounds	849,883	37,319		

KIND.	1908		1907	
	Quantity.	Value.	Quantity.	Value.
Total		$4,590,736		$5,198,854
Bark, wood, nuts, etc.:				
Hemlock bark, cords	8,872	43,789	6,193	27,786
Mangrove bark, tons	15,190	310,745	20,699	426,439
Quebracho wood, tons	48,871	612,971	67,310	840,779
Myrobalan nuts, pounds	20,988,206	229,441	(1)	198,688
Gambier, pounds	26,692,100	895,210	25,853,124	977,009
Sumac, ground, pounds	8,758,241	234,005	12,244,907	259,974
Sumac, unmanufactured, pounds	2,056,541	51,862	3,775,726	83,187
Valonia		6,850		3,881
All other		126,193		82,024
Extract:				
Quebracho, pounds	62,593,671	2,037,648	76,479,846	2,243,386
Quebracho:				
Less in density than 28° Baumé				
Exceeding in density 28° Baumé				
Sumac, pounds	1,060,694	42,022	1,537,420	55,701
Hemlock, pounds				
All other bark extract, pounds				

(1) Quantity not shown.

SLACK COOPERAGE STOCK.

The statistics of slack cooperage stock production during the calendar year 1909 were collected partly by correspondence, as in previous years, and partly by canvass through special agents in connection with the decennial census. This latter fact in part accounts for the greatly increased number of establishments reporting. In 1909 returns were received from 1,506 establishments, compared with 1,151 in 1908 and 950 in 1907.

Table 1 shows the production of slack cooperage stock, by class of product and kinds of wood, for 1907, 1908, and 1909.

TABLE 1.—*Slack cooperage stock—Quantity of each class of product, by kinds of wood: 1907–1909.*

KIND OF WOOD.	STAVES (THOUSANDS).			HEADING (THOUSAND SETS).			HOOPS (THOUSANDS).		
	1909	**1908**	**1907**	**1909**	**1908**	**1907**	**1909**	**1908**	**1907**
Total....	2,029,548	1,557,644	1,175,977	140,234	123,849	106,074	375,793	336,484	490,570
Red gum......	416,570	317,016	210,814	16,700	17,249	11,466	9,877	2,863	1,840
Pine...........	306,621	275,239	205,878	38,926	39,347	27,208	8,321	105	3,996
Beech.........	268,237	166,383	125.354	19,269	15,294	17,711	3,560	131	....
Elm............	245,172	192,882	158,440	6,535	4,978	9,165	339,477	326,894	469,734
Maple.........	133,255	124,747	97,319	13,663	13,323	11,695	731	307	1,747
Chestnut......	93,290	79,633	74,982	876	779	733	....	180	2,000
Birch..........	78,897	52,739	21,479	4,328	3,961	2,146	6,051	1,173	2,489
Basswood.....	72,537	6,306	18,640	13,910	10,186	9,585	30	....	....
Spruce.........	72,219	60,012	76,445	1,861	2,245	2,555	106	....	....
Ash............	71,705	74,494	70,128	5,245	4,297	7,434	2,020	2,135	1,580
Oak...........	66,675	53,737	37,871	1,963	2,092	2,814	1,160	586	2,775
Cottonwood...	66,260	51,062	46,923	6,742	2,067	1,784	....	....	....
Tamarack.....	28,832	13,856	1,120	1,280	431	40	....	....	....
Cypress........	25,673	....	....	....	....	....	....	....	....
Tupelo........	22,500	5,120	2,000	3,296	4,237	206	....	....	....
Sycamore......	17,831	23,454	2,579	661	271	297	....	....	....
Hemlock......	10,376	12,717	16,535	1,206	1,277	574	....	....	....
Cedar..........	9,410	....	....	48	....	....	5	....	....
Yellow poplar.	7,871	4,244	4,999	1,708	791	389	....	....	....
Balsam fir.....	6,037	....	....	1,679	....	....	....	....	....
Douglas fir....	5,165	....	....	190	....	....	....	....	....
Willow........	3,287	4,485	2,000	130	240	106	....	....	....
All other......	1,128	39,518	2,471	18	784	166	4,455	2,110	4,409

The reported output of slack staves in 1909 was 30.3 per cent greater than in 1908 and 72.6 per cent more than in 1907. In the production of slack heading also there was a gain, as compared with both 1908 and 1907, the percentages of increase being 13.2 per cent and 32.2 per cent, respectively. The number of hoops made, however, though greater by 11.7 per cent than the number reported for

1908, was less by 23.4 per cent than that reported for 1907. The production of slack cooperage hoops is affected by the increasing use of wire hoops or other forms of metal hoops.

In the manufacture of slack staves in 1909, 22 kinds of wood were used in sufficient quantities to be shown separately, for five of which a production of over 100,000,000 staves each was reported. These, which were also the principal woods used in the manufacture of slack cooperage staves in 1908 and 1907, contributed the following percentages of the total production in 1909: Red gum, 20.5; pine, 15.1; beech, 13.2; elm, 12.1; and maple, 6.6. More than two-thirds of both the total quantity and the total value of staves reported was contributed by these five kinds of wood. In the two earlier years elm ranked third and beech fourth. The woods for which the largest increases in stave production over 1908 were reported were beech, red gum, basswood, elm, pine, birch, cypress, and tupelo. Cypress, cedar, balsam fir, and Douglas fir staves were shown separately for the first time in 1909; hickory staves, which were thus shown in 1908, are included for 1909 under the heading ''All other.''

Statistics as to the production of heading in 1909 are presented separately for 21 kinds of wood. Pine, with 38,926,000 sets, or 27.8 per cent of the total, ranked first. In the case of no other wood did the heading production equal 50 per cent of that reported for pine, though the four which followed in rank—beech, red gum, basswood, and maple—together furnished 63,542,000 sets, or 45.3 per cent of the total quantity. Among the changes since 1908 in the quantities of heading manufactured from the various woods were increases shown for cottonwood, beech, and basswood; minor increases for balsam fir, yellow poplar, elm, and ash; and decreases for red gum, pine, spruce, oak, tupelo, hemlock, and willow.

In the manufacture of hoops in 1909, 11 woods were employed in sufficient quantities to be shown separately. Elm was the principal wood used in each of the three years for which statistics are given in Table 1, about 90 per cent of the total number of hoops reported in 1909 being of this kind of wood. Though the production of elm hoops in 1909 was slightly greater than in 1908, it was less than in 1907 by about 130,000,000 hoops; and the proportion which such hoops formed of the total number was less in 1909 than in either 1907 or 1908. In addition to elm there were five other woods each of which furnished more than 3,500,000 hoops—red gum, pine, birch, hickory, and beech. For all these woods relatively large increases over the figures for both 1908 and 1907 were reported. Hickory hoops are shown only under the heading "All other" in 1909, forming over 90 per cent of the hoops included in that class.

Table 2 shows the quantity value, and average value of each class of product in 1909.

TABLE 2.—*Slack cooperage stock—Quantity, value, and average value of each class of product, by kinds of wood: 1909.*

KIND OF WOOD.	STAVES.			HEADING.			HOOPS.		
	Quantity (thousands).	Value.		Quantity (thousand sets).	Value.		Quantity (thousands).	Value.	
		Total.	Average per thousand.		Total.	Average per thousand sets.		Total.	Average per thousand.
Total....	2,029,548	$11,477,399	$5.66	140,234	$6,138,881	$43.78	375,793	$2,578,845	$6.86
Red gum......	416,570	2,169,749	5.21	16,700	857,698	51.36	9,877	68,426	6.93
Pine...........	306,621	1,606,338	5.24	38,926	1,465,348	37.64	8,321	62,280	7.48
Beech..........	268,237	1,611,483	6.01	19,269	734,409	38.11	3,560	22,580	6.34
Elm............	245,172	1,688,449	6.89	6,535	257,363	39.38	339,477	2,330,279	6.86
Maple..........	133,255	722,772	5.42	13,663	567,056	41.50	731	2,749	3.76
Chestnut......	93,290	412,152	4.42	876	40,426	46.15	....	....	....
Birch..........	78,897	458,342	5.81	4,328	237,537	54.88	6,051	26,665	4.41
Basswood.....	72,537	397,448	5.48	13,910	776,756	55.84	30	210	7.00
Spruce.........	72,219	398,260	5.51	1,861	80,200	43.10	106	742	7.00
Ash............	71,705	511,394	7.13	5,245	233,763	44.57	2,020	10,935	5.41
Oak............	66,675	463,995	6.96	1,963	94,074	47.92	1,160	9,985	8.61
Cottonwood...	66,260	378,440	5.71	6,742	372,501	55.25	....	....	....
Tamarack.....	28,832	143,189	4.97	1,280	44,600	34.84	....	....	....
Cypress........	25,673	54,038	2.10	....	....	....	....	....	....
Tupelo.........	22,500	107,295	4.77	3,296	147,015	44.60	....	....	....
Sycamore......	17,831	93,681	5.25	661	27,773	42.02	....	....	....
Hemlock.......	10,376	55,266	5.33	1,206	48,402	40.13	....	....	....
Cedar..........	9,410	44,241	4.70	48	2,860	59.58	5	40	8.00
Yellow poplar.	7,871	40,132	5.10	1,708	67,100	39.29	....	....	....
Balsam fir.....	6,037	29,449	4.88	1,679	64,265	38.28	....	....	....
Douglas fir....	5,165	63,813	12.35	190	12,525	65.92	....	....	....
Willow.........	3,287	19,097	5.81	130	6,520	50.15	....	....	....
All other......	1,128	8,376	7.43	18	690	38.33	4,455	43,954	9.87

The aggregate value of slack cooperage staves, heading, and hoops reported in 1909 was $20,195,125, which represents an increase of $3,294,474, or 19.5 per cent, over the value of such products in 1908, and an increase of $4,394,872, or 27.8 per cent, over the value in 1907.

In average value per unit, however, each class of product shows a continuous decrease since 1907. The average value of staves declined from $6.14 per thousand in 1907 to $5.72 in 1908 and $5.66 in 1909. The average value of heading decreased from $47.73 per thousand sets in 1907 to $45.71 in 1908 and $43.78 in 1909; and that of hoops from $7.17 per thousand in 1907 to $6.91 in 1908 and $6.86 in 1909.

The highest and lowest average values per thousand staves, $12.35 and $2.10, were reported, respectively, for staves made from Douglas fir and cypress, from which relatively small quantities were manufactured. Of the 10 leading kinds of wood in 1909, each of which supplied more than 71,000,000 staves, ash showed the highest average value per thousand in both 1909 and 1907, $7.13 and $7.96, respectively, while elm showed the highest average value in 1908, $7.16. In all three years the lowest average value reported for any of these 10 woods was shown for chestnut.

The highest average value per thousand sets of heading, $65.92, was reported for Douglas fir, and the lowest, $34.84, for tamarack. Both of these woods, however, were used for only small quantities of heading, together furnishing less than 1 per cent of the total quantity. Of the seven kinds of wood from each of which over 6,000,000 sets were manufactured in 1909, the highest average values are shown for basswood and cottonwood, $55.84 and $55.25 per thousand sets, respectively, while the lowest value, $37.64, is shown for pine. In 1908 the highest average value reported for any heading made from any of these seven woods was $60.04 per thousand sets for basswood, and the lowest was $33.51 for pine. In 1907 cottonwood had the highest value reported for any of these seven kinds of heading, $66.07, and beech the lowest, $39.96.

Of the hoops made from the five leading woods in 1909—elm, red gum, pine, birch, and hickory—hickory and pine hoops had the highest average value per thousand. In 1907 and 1908 red gum hoops had the highest average value. The lowest average value reported in 1909 was $3.76 for maple hoops.

The manufacture of slack cooperage stock is sometimes combined with that of lumber. Both industries are widely distributed and use the same wide range of woods. In certain instances a combination of the two industries effects a better utilization of timber, either in the woods or at the mill, through the manufacture of cooperage stock from small trees or from species not desired for lumber, or of staves and heading from short or defective logs. Slabs are sometimes worked into heading.

Michigan, Arkansas, Pennsylvania, Virginia, and Missouri, in the order named, were the leading states in the production of slack staves, reporting a combined output of 1,193,364,000 staves, or 58.8 per cent of the total number. In 1908 the same states led, ranking in a slightly different order, and reporting 60.1 per cent of the total for that year. The states which followed these in rank in 1909—Wisconsin, New York, and Ohio—had a combined production of 271,591,000 staves, or 13.4 per cent of the total for the later year. In only four of the states shown separately for both 1909 and 1908—Illinois, Louisiana, Mississippi, and New Hampshire—were fewer staves produced in 1909 than in 1908.

Red gum staves were manufactured principally in Missouri and Arkansas, the present centers of the commercial exploitation of this kind of wood. Of the total of 416,570,000 red gum staves made in 1909, 273,111,000, or 65.6 per cent, were reported from these two states. In Missouri staves made from this wood formed 71.9 per cent of the total number of staves produced, and in Arkansas, 51.3 per cent. Although red gum staves are usually produced in states where this tree is most abundant, occasionally they are reported from a state outside of its range. This is the case in Maine, where the material used for such staves probably consists of logs brought as ballast by vessels from southern points.

Pine staves were manufactured principally in Virginia, the number reported from that state forming 44.3 per cent of the total for the country and 67.9 per cent of all staves reported from the state. New Hampshire, Maryland, and Florida are each credited with a production of slightly more than 25,000,000. Although no attempt was made to distinguish the kinds of pine, it is probable that much of that used in Maine, New Hampshire, Massachusetts, Pennsylvania, Michigan, and Wisconsin was eastern white or Norway pine, while that used in Washington was probably western white or western yellow pine, and that in the Southern states yellow pine.

Michigan and Pennsylvania together reported 232,238,000 beech and 88,188,000 maple staves, or 86.6 and 66.2 per cent, respectively, of the corresponding totals for the country. In the production of elm staves Michigan, Ohio, Missouri, and Wisconsin were the leading states, their combined output amounting to 189,307,000 staves, or 77.2 per cent of the total for this kind of wood.

STAVES.

Table 3 shows the quantity of staves produced in 1909 from the various kinds of wood, by states.

TABLE 3.—*Slack cooperage stock—Quantity of staves produced, by kinds of wood and by states: 1909.*

STATE.	Total (thousands).	Red gum (thousands).	Pine (thousands).	Beech (thousands).	Elm (thousands).	Maple (thousands).
United States	2,029,548	416,570	306,621	268,237	245,172	133,255
Alabama	14,977		14,977			
Arkansas	257,162	132,032	11,849		10,167	1,640
Delaware	2,494		2,494			
Florida	25,664	38	25,626			
Georgia	8,529	120	6,951		25	
Illinois	48,087	26,792		500	11,326	3,400
Indiana	32,522	5,789		6,436	12,005	4,600
Kentucky	52,089	39,243	485	1,860	4,032	1,739
Louisiana	24,300	12,659	258		400	
Maine	69,015	413	4,594	1,182	200	1,629
Maryland	28,521		25,771			
Massachusetts	11,864		8,920			100
Michigan	327,059		2,760	141,422	103,657	59,914
Minnesota	34,200		500		2,150	
Mississippi	22,002	7,940	777	230	525	
Missouri	196,081	141,079			23,176	3,287
New Hampshire	28,455		26,838	38	8	652
New York	82,104	110	430	16,119	11,919	14,659
North Carolina	33,478	23,820	4,158			
Ohio	73,328	1		9,275	41,947	8,824
Pennsylvania	213,190		13,194	90,816	100	28,274
South Carolina	5,257		5,257			
Tennessee	67,127	18,869			2,803	90
Texas	2,764		2,764			
Vermont	16,431		200	184	200	37
Virginia	199,872	7,655	135,731	170	5	1,155
Washington	9,158		1,000			
West Virginia	9,744	10	418	5		451
Wisconsin	116,159		2,432		20,527	2,804
All other states [1]	17,915		8,237			

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[1] Includes Arizona, California, Connecticut, Oklahoma, Oregon, and Rhode Island.

TABLE 3.—*Slack cooperage stock—Quantity of staves produced, by kinds of wood and by states: 1909*—Continued.

STATE.	Chestnut (thousands).	Birch (thousands).	Basswood (thousands).	Spruce (thousands).	Ash (thousands).	Oak (thousands).
United States	93,290	78,897	72,537	72,219	71,705	66,675
Alabama						
Arkansas					42,975	802
Delaware						
Florida						
Georgia					400	310
Illinois		151			980	150
Indiana	30	293	461		493	608
Kentucky	100	50	20		263	2,106
Louisiana					150	300
Maine		2,583	63	46,538		846
Maryland	2,750					
Massachusetts	1,241	100	30	863		100
Michigan		5,133	1,575	170	3,033	175
Minnesota			10,750			
Mississippi					50	1,480
Missouri					18,870	
New Hampshire	398	156		60	10	230
New York	1,065	35,386	231	635	1,263	155
North Carolina						
Ohio	385	19	8,724		686	2,304
Pennsylvania	60,484	11,791	631	360	116	5,298
South Carolina						
Tennessee			300		1,607	20,906
Texas						
Vermont		169		15,441	200	
Virginia	20,284		250			26,259
Washington				5,661		
West Virginia	4,053	60	32	5	10	4,415
Wisconsin		23,006	49,470		599	21
All other states [1]	2,500			2,486		210

STATE.	Cottonwood (thousands).	Tamarack (thousands).	Cypress (thousands).	Tupelo (thousands).	Sycamore (thousands).	Hemlock (thousands).
United States	66,260	28,832	25,673	22,500	17,831	10,376
Alabama						
Arkansas	25,342		25,000	2,400	4,955	
Delaware						
Florida						
Georgia			673		50	
Illinois	2,001				2,198	
Indiana	854				923	
Kentucky	1,046				1,126	
Louisiana	7,460					
Maine	594					2,576
Maryland						
Massachusetts	510					
Michigan	375	3,332				5,413
Minnesota		20,800				
Mississippi	1,000			10,000		
Missouri	2,419				7,250	
New Hampshire	10					40
New York	50					82
North Carolina				5,500		
Ohio	575				79	35
Pennsylvania					1	1,225
South Carolina						
Tennessee	15,975				1,249	
Texas						
Vermont						
Virginia	1,476	100		4,600		6
Washington	504					101
West Virginia						
Wisconsin	6,050	4,600				
All other states [1]	19					898

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[1] Includes Arizona, California, Connecticut, Oklahoma, Oregon, and Rhode Island.

TABLE 3.—*Slack cooperage stock—Quantity of staves produced, by kinds of wood and by states: 1909*—Continued.

STATE.	Cedar (thousands).	Yellow poplar (thousands).	Balsam fir (thousands).	Douglas fir (thousands).	Willow (thousands).	All other (thousands).
United States	9,410	7,871	6,037	5,165	3,287	1,128
Alabama						
Arkansas						
Delaware						
Florida						
Georgia						
Illinois		75			116	398
Indiana						30
Kentucky		16			3	
Louisiana					3,073	
Maine	2,010		5,787			
Maryland						
Massachusetts						
Michigan			100			
Minnesota						
Mississippi						
Missouri						
New Hampshire						15
New York						
North Carolina						
Ohio		176			5	293
Pennsylvania		710			90	100
South Carolina						
Tennessee	643	4,685				
Texas						
Vermont						
Virginia	7	1,924				250
Washington	200			1,692		
West Virginia		285				
Wisconsin	6,500		150			
All other states [1]	50			3,473		42

[1] Includes Arizona, California, Connecticut, Oklahoma, Oregon, and Rhode Island.

HEADING.

The production of slack cooperage heading is shown, by states, in Table 4.

TABLE 4.—*Slack cooperage stock—Quantity of heading produced, by kinds of wood and by states: 1909.*

STATE.	Total (thousand sets).	Pine (thousand sets).	Beech (thousand sets).	Red gum (thousand sets).	Basswood (thousand sets).
United States	140,234	38,926	19,269	16,700	13,910
Alabama	4,049	4,049			
Arkansas	25,549	14,877		5,878	
Florida	1,479	1,477		2	
Georgia	933	913		20	
Illinois	1,117			685	
Indiana	6,157		330	851	126
Kentucky	4,245	875	438	1,596	83
Louisiana	2,162	20		154	
Maine	7,543	3,887	162	417	31
Maryland	428	428			
Massachusetts	1,654	1,167	4		1
Michigan	26,591	130	11,315		2,816
Minnesota	2,507				1,477
Missouri	7,333			4,557	
New Hampshire	1,662	1,630			
New York	6,932	530	1,281	165	295
North Carolina	2,243	426		1,577	
Ohio	2,204	26	255	14	896
Pennsylvania	9,250	557	5,426		145
Tennessee	3,145			431	
Vermont	861		58		15
Virginia	9,686	7,193		353	15
Washington	341	200			
West Virginia	160	25			
Wisconsin	11,386	248			8,010
All other states [1]	617	268			

[1] Includes Arizona, California, Delaware, Mississippi, Oregon, and South Carolina.

TABLE 4.—*Slack cooperage stock—Quantity of heading produced, by kinds of wood and by states: 1909*—Continued.

STATE.	Maple (thousand sets).	Cottonwood (thousand sets).	Elm (thousand sets).	Ash (thousand sets).	Birch (thousand sets).	Tupelo (thousand sets).
United States	13,663	6,742	6,535	5,245	4,328	3,296
Alabama						
Arkansas		3,725		1,011		58
Florida						
Georgia						
Illinois	176	23	60	20		75
Indiana	637	281	2,089	1,549		
Kentucky	215	37	292			
Louisiana		1,251	1	94		537
Maine	40	145	9		157	
Maryland						
Massachusetts	124	104			100	
Michigan	8,634	65	2,003	470	385	
Minnesota				30		
Missouri	85	75	20	1,435		1,161
New Hampshire	7					
New York	1,219	132	572	31	1,987	
North Carolina						240
Ohio	389	19	305	169		
Pennsylvania	2,041		114	15	672	
Tennessee		525	247			438
Vermont	40		5		10	
Virginia	25	41	5			787
Washington						
West Virginia						
Wisconsin	31	318	813	421	1,017	
All other states [1]		1				

STATE.	Oak (thousand sets).	Spruce (thousand sets).	Yellow poplar (thousand sets).	Balsam fir (thousand sets).	Tamarack (thousand sets).	Hemlock (thousand sets).
United States	1,963	1,861	1,708	1,679	1,280	1,206
Alabama						
Arkansas						
Florida						
Georgia						
Illinois	8					
Indiana	26		20			
Kentucky	162		200			
Louisiana	1					
Maine	1	976		1,599		119
Maryland						
Massachusetts	110	10				
Michigan	47					697
Minnesota					1,000	
Missouri						
New Hampshire						
New York	283	4				12
North Carolina						
Ohio	76		28			
Pennsylvania	143					100
Tennessee	508		865			
Vermont		621				112
Virginia	546		595			
Washington		131				
West Virginia	50					
Wisconsin	2			80	280	119
All other states [1]		119				47

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[1] Includes Arizona, California, Delaware, Mississippi, Oregon, and South Carolina.

TABLE 4.—*Slack cooperage stock—Quantity of heading produced, by kinds of wood and by states: 1909*—Continued.

STATE.	Chestnut (thousand sets).	Sycamore (thousand sets).	Douglas fir (thousand sets).	Willow (thousand sets).	Cedar (thousand sets).	All other (thousand sets).
United States	876	661	190	130	48	18
Alabama						
Arkansas						
Florida						
Georgia						
Illinois		62				8
Indiana		248				
Kentucky	50	297				
Louisiana				104		
Maine						
Maryland						
Massachusetts	34					
Michigan	9	20				
Minnesota						
Missouri						
New Hampshire	25					
New York	393	4		19		5
North Carolina						
Ohio	10	17				
Pennsylvania	27			7		3
Tennessee	120	10			1	
Vermont						
Virginia	123	3				
Washington			10			
West Virginia	85					
Wisconsin					47	
All other states [1]			180			2

[1] Includes Arizona, California, Delaware, Mississippi, Oregon, and South Carolina.

In 1909 slack cooperage heading was reported from 31 states, figures for 25 of which are shown separately in the table. As in 1908, Michigan and Arkansas were the leading states with 19 per cent and 18.2 per cent, respectively, of the total production of heading in 1909. There were, however, seven other states, each of which reported an output of over 6,000,000 sets, and together the nine leading states reported 110,427,000 sets, or 78.7 per cent of the total.

As compared with 1908, the largest increases in heading production were in Arkansas, Michigan, Wisconsin, Maine, Indiana, Tennessee, and New York, and the largest decreases in New Hampshire, Kentucky, and Missouri.

Of the pine heading, more than two-thirds was reported from Arkansas, Virginia, and Alabama. In the manufacture of beech heading Michigan and Pennsylvania led, their combined output amounting to 16,741,000 sets, or 86.9 per cent of the total reported.

Of the red gum heading, 10,435,000 sets, or 62.5 per cent of the total, were reported by Arkansas and Missouri jointly. Kentucky and North Carolina were the only other states in which the production of such heading exceeded 1,500,000 sets. About 88 per cent of the basswood heading was reported from Wisconsin, Michigan and Minnesota being the only other states which manufactured more than 1,000,000 sets. Maple heading was made principally in Michigan, which, together with Pennsylvania and New York, the states next in rank, reported 11,894,000 sets, or 87.1 per cent of the total for this wood.

None of the 16 other species shown separately furnished as much as 5 per cent of the total quantity of heading. In the production of cottonwood heading Arkansas was the leading state, with 55.3 per cent of the total quantity, while Indiana led in elm and ash, with 32 per cent and 29.5 per cent of the total, respectively. New York reported 45.9 per cent of the birch; Missouri, 35.2 per cent of the tupelo; Virginia and Tennessee, 27.8 per cent and 25.9 per cent, respectively, of the oak; Maine, 52.4 per cent of the spruce and 95.2 per cent of the balsam fir; Tennessee, 50.6 per cent of the yellow poplar; Minnesota, 78.1 per cent of the tamarack; and Michigan, 57.8 per cent of the hemlock heading.

HOOPS.

Statistics of the production of slack hoops are given, by states, in Table 5.

TABLE 5.—*Slack cooperage stock—Quantity of hoops produced, by kinds of wood and by states: 1909.*

STATE.	Total (thousands).	Elm (thousands).	Red gum (thousands).	Pine (thousands).	Birch (thousands).
United States	375,793	339,477	9,877	8,321	6,051
Alabama	4,150	...	...	...	...
Arkansas	26,164	25,545	...	...	...
Florida	306	...	...	306	...
Illinois	820	820	...	...	...
Indiana	74,129	74,009	...	...	...
Kentucky	180	18	25	...	...
Louisiana	14,805	50	6,755	8,000	...
Maine	6,728	144	37	15	5,712
Massachusetts	1,000	1,000	...	...	...
Michigan	65,898	62,148	...	...	...
Minnesota	3,000	3,000	...	...	...
Mississippi	2,000	2,000	...	...	...
Missouri	46,223	43,723	2,500	...	...
New York	2,098	1,363	110	...	339
North Carolina	503	70	400	...	...
Ohio	110,540	110,540	...	...	...
Tennessee	13,130	13,060	50	...	...
Texas	1,425	1,425	...	...	...
Vermont	806	200	...	...	...
Washington	300	...	...	...	...
Wisconsin	1,460	260	...	...	...
All other states [1]	128	102	...	...	...

[1] Includes Pennsylvania, Virginia, and West Virginia.

TABLE 5.—*Slack cooperage stock—Quantity of hoops produced by kinds of wood and by states: 1909*—Continued.

STATE.	Beech (thousands).	Ash (thousands).	Oak (thousands).	Maple (thousands).
United States	3,560	2,020	1,160	731
Alabama			150	
Arkansas			619	
Florida				
Illinois				
Indiana				
Kentucky			102	
Louisiana				
Maine		205	90	525
Massachusetts				
Michigan	3,000	615	75	30
Minnesota				
Mississippi				
Missouri				
New York	60		50	176
North Carolina			33	
Ohio				
Tennessee			15	
Texas				
Vermont	500			
Washington				
Wisconsin		1,200		
All other states [1]			26	

STATE.	Spruce (thousands).	Basswood (thousands).	Cedar (thousands).	All other (thousands).
United States	106	30	5	4,455
Alabama				4,000
Arkansas				
Florida				
Illinois				
Indiana				120
Kentucky				35
Louisiana				
Maine				
Massachusetts				
Michigan		30		
Minnesota				
Mississippi				
Missouri				
New York				
North Carolina				
Ohio				
Tennessee			5	
Texas				
Vermont	106			
Washington				300
Wisconsin				
All other states [1]				

[1] Includes Pennsylvania, Virginia, and West Virginia.

Of the 21 states shown separately, Ohio, which reported elm hoops exclusively, had much the greatest production, nearly 30 per cent of the total number reported being credited to this state. In 1909, Ohio, Indiana, and Michigan, the leading states in hoop production, reported 250,567,000, or 66.7 per cent of the total number manufactured, while in 1908 these three states reported 277,121,000, or 82.4 per cent of the total for that year.

Decreases in production, as compared with 1908, are shown for a number of states, the largest being in Michigan, Illinois, and Ohio. On the other hand, large gains were reported in Missouri and Arkansas, while Louisiana, from which no hoops were reported in 1908, had a considerable output in 1909 and led in the production of red gum and pine hoops. In the manufacture of birch and maple hoops, Maine was the leading state. Michigan reported the largest quantities of beech and basswood hoops and Wisconsin the largest quantity of ash hoops.

In addition to the hoops for which statistics are given, there were probably a large number made by farmers in certain parts of the United States from hickory, alder, and other woods. For these, however, it is impossible to estimate the production.

TIGHT COOPERAGE STOCK.

The manufacture of tight cooperage stock was reported by 533 active establishments in 1909, as compared with 406 in 1908 and 373 in 1907. Although the quantity produced was greater in 1909 than in 1908, the value of the stock showed a great decline. This was due to the increasing proportion of the total formed by sawed staves, particularly those made of woods other than oak; and also to the tendency toward a greater relative production of the smaller sizes in some classes of stock.

In Table 1 is presented a comparative summary of the quantity, value, and average value per thousand of the various classes of tight cooperage staves produced in 1907, 1908, and 1909.

TABLE 1.—*Tight cooperage stock—Quantity and value of staves produced, with average value per thousand, by classes: 1909, 1908, and 1907.*

CLASS.	1909		
	Quantity (thousands).	Value.	
		Total.	Average per thousand.
Aggregate	379,231	$9,201,964	$24.26
Sawed, total	341,259	7,085,808	20.76
Oil and tierce	158,457	3,503,859	22.11
Spirit and wine	38,933	1,637,839	42.07
Half barrel	19,356	160,446	8.29
Pork	13,457	243,522	18.10
Bourbon	11,991	566,128	47.21
All other	99,065	974,014	9.83
Bucked and split, total	15,104	748,076	49.53
Bourbon	8,332	452,373	54.29
West Indian	2,517	159,710	63.45
Spirit and wine	1,949	83,332	42.76
All other	2,306	52,661	22.84
Hewed, total	6,321	618,560	97.86
French claret	5,320	425,205	79.92
Pipe	825	145,795	176.72
Tank	76	41,660	548.16
All other	100	5,900	59.00
Beer and ale, total	16,547	749,520	45.30
Beer, barrel	1,560	126,525	81.11
Beer, half barrel	6,217	315,943	50.82
Beer, quarter barrel	5,399	207,275	38.39
Beer, sixth barrel	1,056	18,528	17.55
Beer, eighth barrel	2,058	56,009	27.22
Ale, hogshead	145	16,265	112.17
All other	112	8,975	80.13

TABLE 1.—*Tight cooperage stock—Quantity and value of staves produced, with average value per thousand, by classes: 1909, 1908, and 1907*—Continued.

CLASS.	1908			1907		
	Quantity (thousands).	Value.		Quantity (thousands).	Value.	
		Total.	Average per thousand.		Total.	Average per thousand.
Aggregate	345,280	$10,009,295	$28.99	385,232	$12,942,885	$33.60
Sawed, total	301,728	7,383,806	24.47	325,653	9,062,678	27.83
Oil and tierce	167,509	3,838,168	22.91	179,375	4,686,204	26.13
Spirit and wine	38,732	1,640,961	42.37	41,452	1,924,567	46.43
Half barrel	(1)	(1)	....	(1)	(1)	....
Pork	(1)	(1)	....	(1)	(1)	....
Bourbon	14,579	722,720	49.57	26,223	1,393,254	53.13
All other	80,908	1,181,957	14.61	78,603	1,058,653	13.47
Bucked and split, total	18,339	910,105	49.63	25,082	1,277,104	50.92
Bourbon	8,775	485,912	55.37	11,099	691,980	62.35
West Indian	2,475	157,805	63.76	4,797	259,405	54.08
Spirit and wine	4,583	199,305	43.49	4,325	211,642	48.93
All other	2,506	67,083	26.77	4,861	114,077	23.47
Hewed, total	8,019	758,500	94.59	12,737	1,513,203	118.80
French claret	6,864	521,355	75.95	8,581	763,715	89.00
Pipe	688	96,370	140.07	3,625	456,043	125.80
Tank	217	131,940	608.02	505	292,635	579.48
All other	250	8,835	35.34	26	810	31.15
Beer and ale, total	17,194	956,884	55.65	21,760	1,089,900	50.09
Beer, barrel	3,063	250,896	81.91	3,188	238,567	74.83
Beer, half barrel	6,446	376,432	58.40	7,250	411,019	56.69
Beer, quarter barrel	(1)	(1)	....	(1)	(1)	....
Beer, sixth barrel	(1)	(1)	....	(1)	(1)	....
Beer, eighth barrel	(1)	(1)	....	(1)	(1)	....
Ale, hogshead	284	37,735	132.87	143	22,540	157.62
All other	7,401	291,821	39.43	11,179	417,774	37.37

[1] Not shown separately.

The total output of the tight cooperage industry in 1909 was 379,231,000 staves and 20,691,201 sets of heading. These figures represent increases of approximately 34,000,000 staves and 176,000 sets of heading over the corresponding totals for 1908, but are smaller than those for 1907 by about 6,000,000 staves and 7,000,000 sets of heading. The aggregate value of tight staves and heading produced in 1909, $12,918,260, was $1,488,183 less than for the preceding year and $6,889,110 less than for 1907.

Sawed staves formed 90 per cent of the total number in 1909, as compared with 87.4 per cent in 1908 and 84.5 per cent in 1907. The total quantity produced in 1909 represents a gain of 39,531,000 staves over 1908 and a gain of 15,606,000 staves over 1907, due largely to the increased use of woods other than oak in the manufacture of this class of staves. For other classes of staves, which require high-grade oak as material, large decreases are shown. Bucked and split staves, which in 1909 formed 4 per cent of the total tight stave production, showed a decrease of 3,235,000 from the production of 1908 and of nearly 10,000,000 from that of 1907. The decrease in hewed staves since 1907 was 6,416,000, or more than 50 per cent, and that in beer and ale staves 5,213,000, or 24 per cent. In 1909 hewed staves formed 1.7 per cent of the total and beer and ale staves 4.4 per cent.

The average value per thousand of all staves produced in the United States in 1909 was $24.26, as compared with $28.99 in 1908 and $33.60 in 1907. The greatest actual decrease from 1907 to 1909 in the value per thousand shown for any class of staves was $20.94 in the case of hewed staves; and the greatest relative decrease occurred in the case of sawed staves. The decline in average value shown for the latter class was due to the smaller sizes manufactured and to the growing tendency, already noted, to use woods other than oak in the manufacture of this class of staves.

Table 2 shows the quantity, value, and average value of the various classes of heading produced in 1907, 1908, and 1909.

TABLE 2.—*Tight cooperage stock—Quantity and value of heading produced, with average value per set, by classes: 1909, 1908, and 1907.*

CLASS.	1909		
	Quantity (sets).	Value.	
		Total.	Average per set.
Aggregate	20,691,201	$3,716,296	$0.18
Sawed, total	19,735,693	3,534,867	0.18
Oil and tierce	9,172,099	1,531,983	0.17
Spirit and wine	2,207,596	737,004	0.33
Half barrel and keg	1,680,004	163,902	0.10
Bourbon	1,289,713	527,704	0.41
Pork	393,319	58,900	0.15
All other	4,992,962	515,374	0.10
Beer and ale, total	955,508	181,429	0.19
Half barrel	342,735	70,983	0.21
Barrel	91,050	32,700	0.36
Hogshead	150	188	1.25
All other	521,573	77,558	0.15

CLASS.	1908			1907		
	Quantity (sets).	Value.		Quantity (sets).	Value.	
		Total.	Average per set.		Total.	Average per set.
Aggregate	20,515,072	$4,397,148	$0.21	27,692,994	$6,864,485	$0.25
Sawed, total	19,703,525	4,182,528	0.21	25,828,909	6,367,738	0.25
Oil and tierce	10,290,127	1,955,070	0.19	13,919,411	2,814,973	0.20
Spirit and wine	2,234,331	706,968	0.32	2,667,708	974,114	0.37
Half barrel and keg	(1)	(1)	....	(1)	(1)	....
Bourbon	2,212,652	894,298	0.40	4,651,678	1,905,706	0.41
Pork	(1)	(1)	....	(1)	(1)	....
All other	4,966,415	626,192	0.13	4,590,112	672,945	0.15
Beer and ale, total	811,547	214,620	0.26	1,864,085	496,747	0.27
Half barrel	251,945	78,176	0.31	700,737	200,652	0.29
Barrel	177,544	90,299	0.51	241,154	116,149	0.48
Hogshead	(1)	(1)	....	(1)	(1)	....
All other	382,058	46,145	0.12	922,194	179,946	0.20

[1] Not shown separately.

The quantity of heading reported in 1909, though slightly greater than in 1908, was much less than in 1907, while in the total value of output and in that of nearly every class, decreases are shown as compared with 1907.

The production of sawed heading in 1909 was only about 32,000 sets more than in 1908 and was 6,093,216 sets less than in 1907. Of beer and ale heading the quantity produced in 1909 was greater by about 144,000 sets than the output in 1908, but less by about 908,500 sets than that in 1907.

The tight cooperage industry is often highly specialized and few plants make more than two or three kinds of staves or heading. The manufacture of beer and ale stock constitutes a distinct branch of the industry.

STAVES.

In Table 3 is shown, by states, the production of tight staves in 1909.

TABLE 3.—*Tight cooperage stock—Quantity of staves produced, by classes and by states: 1909.*

STATE.	Total (thousands).	Sawed (thousands).	Bucked and split (thousands).	Hewed (thousands).	Beer and ale (thousands).
United States	379,231	341,259	15,104	6,321	16,547
Alabama	12,978	12,398	430	...	150
Arkansas	87,582	76,009	8,796	672	2,105
Georgia	955	955	...	...	...
Indiana	326	326	...	...	...
Kentucky	45,694	32,731	2,930	183	9,850
Louisiana	17,228	13,555	629	2,909	135
Maine	1,272	1,272	...	...	...
Michigan	952	952	...	...	...
Minnesota	838	762	...	...	76
Mississippi	39,052	34,085	1,006	1,461	2,500
Missouri	22,420	22,420	...	...	...
New Hampshire	20,773	20 773	...	...	...
New York	683	683	...	...	...
North Carolina	8,513	8,513	...	...	...
Ohio	26,534	26,534	...	...	...
Pennsylvania	1,623	1,623	...	...	...
Tennessee	35,744	34,345	278	4	1,117
Texas	2,520	310	843	1,062	305
Vermont	621	621	...	...	...
Virginia	1,899	1,899	...	...	...
West Virginia	40,402	39,940	192	30	240
Wisconsin	5,323	5,323	...	...	...
All other states[1]	5,299	5,230	...	...	69

[1] Includes California, Delaware, Florida, Massachusetts, Oklahoma, Oregon, South Carolina, Utah, and Washington.

The number of states which reported tight staves in 1909 was 31, as compared with 24 in 1908. In 1909, as in the preceding three years, Arkansas ranked first in respect to production, with 23.1 per cent of the total quantity, and was followed by Kentucky, with 12 per cent; West Virginia, with 10.7 per cent; and Mississippi, with

10.3 per cent. Tennessee followed Mississippi with 9.4 per cent of the total, the quantity reported from this state representing a decrease of over 50 per cent since 1908, when this state held second rank. Ohio ranked next in importance, with 7 per cent of all staves reported. These six states, each of which produced over 25,000,000 staves, together reported 275,008,000 staves, or 72.5 per cent of the total for the country. In addition there were four states—Alabama, Louisiana, Missouri, and New Hampshire—each of which reported between 12,500,000 and 25,000,000 staves, their combined output amounting to 73,399,000 staves, or 19.4 per cent of the total.

In the production of sawed staves the same states led as in the case of the aggregate of tight staves, but the order was slightly different. Arkansas, the leading state, which reported 22.3 per cent of the total for the country, showed a decrease of 4,646,000 sawed staves as compared with 1908. West Virginia was second in rank in 1909, with 11.7 per cent of the total, and was followed by Tennessee, with 10.1 per cent; Mississippi, with 10 per cent; Kentucky, with 9.6 per cent; Ohio, with 7.8 per cent; Missouri, with 6.6 per cent; and New Hampshire, with 6.1 per cent.

Of the bucked and split staves, 14,204,000, or 94 per cent of the total for the country, were reported by Arkansas, Kentucky, Mississippi, Texas, and Louisiana, ranking in the order named. Although this quantity is 2,705,000 less than the corresponding figures for 1908, the proportion which it formed of the total for this class of staves was slightly greater.

In the output of hewed staves Louisiana, Mississippi, and Texas were the principal states, being together credited with 5,432,000, or 85.9 per cent of the total for the country. The states which led in the production of beer and ale staves were Kentucky, with 9,850,000, or 59.5 per cent of the total for the country; Mississippi, with 2,500,000, or 15.1 per cent; Arkansas, with 2,105,000, or 12.7 per cent; and Tennessee, with 1,117,000, or 6.8 per cent. The combined production of these four states, 15,572,000 beer and ale staves, formed 94.1 per cent of the total of this class for the country. Kentucky was the only one of the states mentioned for which a great increase was shown in the production of beer and ale staves.

In the early years of the tight stave industry white oak was the only kind of wood considered suitable for stave making. More recently, however, there has been a tendency to use an increasing number of woods, some of which have become important factors in the manufacture of sawed tight staves.

Table 4 shows the production of sawed staves in 1909, by kinds of wood and by classes.

TABLE 4.—*Tight cooperage stock—Quantity of sawed staves produced, by kinds of wood and by classes: 1909.*

CLASS.	Total (thousands).	White oak (thousands).	Red oak (thousands).	Basswood (thousands).	Gum (thousands).	Pine (thousands).	Ash (thousands).	All other (thousands).
Total	341,259	217,019	30,619	30,589	23,566	20,648	5,568	13,250
Oil and tierce	158,457	129,012	24,283		260		14	4,888
Spirit and wine	38,933	37,661	1,147					125
Half barrel	19,356	4,417	192	179	250	13,550	600	168
Cut-offs	14,239	12,108	1,661		370		40	60
Pork	13,457	7,817	371				4,669	600
Bourbon	11,991	11,991						
Lead	7,670	7,670						
All other	77,156	6,343	2,965	30,410	22,686	7,098	245	7,409

White oak formed 63.6 per cent of the sawed staves reported in 1909 and red oak 9 per cent. These two kinds of oak furnished 247,638,000 staves, or practically 10,900,000 less than in 1908. Basswood staves, which are shown separately in 1909 for the first time by manufacturers of tight staves, formed 9 per cent of the sawed staves; and gum and pine staves, which ranked next in importance, 6.9 per cent and 6.1 per cent, respectively. The output of ash staves, which represented 1.6 per cent of all sawed staves, was much smaller than in 1908. Staves made from the kinds of wood included under the heading "All other," consisting principally of chestnut oak, cypress, Douglas fir, chestnut, and spruce, formed 3.9 per cent of the sawed staves.

Of all sawed staves reported, 158,457,000, or 46.4 per cent, were oil and tierce staves, and of these 81.4 per cent were of white oak and 15.3 per cent of red oak. Spirit and wine staves, 96.7 per cent of which were white oak, formed 11.4 per cent of the sawed staves. No other class of sawed staves among those shown separately formed as much as 6 per cent of the total. Of the half-barrel staves, 70 per cent were pine, while all the Bourbon and the lead staves, as well as the majority of the cut-offs, were white oak. More than one-third of the pork staves were of ash, the balance being chiefly white oak. Of the sawed staves in the class designated "All other," which comprised staves for buckets, fish barrels, etc., basswood staves formed 39.4 per cent and gum 29.4 per cent.

Table 5 shows the production of each class of sawed staves in 1909, by states.

In 1909 sawed staves were reported from eight more states than in 1908. The leading states in the later year were Arkansas, West Virginia, Tennessee, Mississippi, and Kentucky, which together produced 217,110,000 sawed staves. In each of these states the principal class of sawed staves produced was oil and tierce staves, 62.6 per cent of their combined sawed stave production being of this class. In New Hampshire 64.7 per cent of the sawed staves were half-barrel staves, and in Missouri and Ohio, 75.5 per cent and 97.5 per cent, respectively, were of the class designated "All other." The staves reported from Ohio were largely of basswood.

TABLE 5.—*Tight cooperage stock—Quantity of sawed staves produced, by classes and by states: 1909.*

STATE.	Total (thousands).	Oil and tierce (thousands).	Spirit and wine (thousands).	Half barrel (thousands).	Cut-offs (thousands).	Pork (thousands).	Bourbon (thousands).	All other (thousands).
United States.	341,259	158,457	38,933	19,356	14,239	13,457	11,991	84,826
Alabama	12,398	7,331	2,494	...	1,746	336	491	...
Arkansas	76,009	39,317	18,103	410	2,833	5,489	3,194	6,663
Georgia	955	855	...	...	100	...	...	...
Kentucky	32,731	23,152	5,184	30	1,201	180	2,949	35
Louisiana	13,555	7,262	3,834	21	334	181	...	1,923
Michigan	952	...	...	...	...	912	...	40
Mississippi	34,085	15,524	7,245	1,913	2,151	1,486	3,095	2,671
Missouri	22,420	2,717	35	1,645	505	493	90	16,935
New Hampshire	20,773	...	...	13,450	...	75	...	7,248
North Carolina	8,513	588	...	...	551	...	...	7,374
Ohio	26,534	643	...	...	...	10	...	25,881
Pennsylvania	1,623	171	...	198	...	54	...	1,200
Tennessee	34,345	22,951	882	350	2,015	2,641	2,095	3,411
Virginia	1,899	1,714	...	...	30	...	25	130
West Virginia	39,940	34,938	631	350	2,573	900	52	496
Wisconsin	5,323	...	...	779	...	...	...	4,544
All other states[1]	9,204	1,294	525	210	200	700	...	6,275

[1] Includes California, Delaware, Florida, Indiana, Maine, Massachusetts, Minnesota, New York, Oklahoma, Oregon, South Carolina, Texas, Utah, Vermont, and Washington.

Table 6 shows the reported production of each class of bucked and split staves, by states, in 1909:

TABLE 6.—*Tight cooperage stock—Quantity of bucked and split staves produced, by classes and by states: 1909.*

STATE.	Total (thousands).	Bourbon (thousands).	West Indian (thousands).	Spirit and wine (thousands).	Seconds (thousands).	Cut-offs (thousands).	Half barrel (thousands).	All other (thousands).
United States..	15,104	8,332	2,517	1,949	1,390	471	417	28
Alabama	430	341	...	...	89	...	...	...
Arkansas	8,796	5,315	977	1,580	455	278	188	3
Kentucky	2,930	1,653	622	...	548	7	100	...
Louisiana	629	597	15	...	5	3	...	9
Mississippi	1,006	134	331	248	152	141	...	...
Tennessee	278	22	220	...	36	...	...	...
Texas	843	220	295	101	50	32	129	16
West Virginia	192	50	57	20	55	10	...	...

Bucked and split staves, which require fine white oak as material, were manufactured in only eight states in 1909, as compared with nine in 1908. In the total output of this class of stock there has been a decrease of 3,235,000 pieces since 1908, and this decrease has been shared by every state shown in the table. The percentages of decrease ranged from 7.6 in Arkansas to 51.6 in Louisiana.

In the relative importance of some kinds of bucked and split staves manufactured there has been considerable change since 1908. Bourbon staves formed 55.2 per cent of this class of staves in 1909, as compared with 47.8 per cent in 1908, while the proportion formed by spirit and wine staves decreased in the same period from 25 per cent to 12.9 per cent. Arkansas and Kentucky together reported more than four-fifths of the Bourbon staves, nearly two-thirds of the West Indian staves, and about seven-tenths of the seconds and half-barrel staves; and Arkansas alone reported about four-fifths of the spirit and wine staves and nearly three-fifths of the cut-offs.

In table 7 is shown the reported production of each class of hewed staves in 1909, by states.

TABLE 7.—*Tight cooperage stock—Quantity of hewed staves produced, by classes and by states: 1909.*

STATE.	Total. (thousands).	French claret (thousands).	Pipe (thousands).	Tank (thousands).	All other (thousands).
United States	6,321	5,320	825	76	100
Arkansas	672	651	8	13	
Kentucky	183		175	8	
Louisiana	2,909	2,844	50	15	
Mississippi	1,461	925	516	20	
Tennessee	4		4		
Texas	1,062	900	72	20	70
West Virginia	30				30

For the production of hewed staves a very high grade of white oak timber is required. Since the waste in manufacture is great for this class of staves and the supply of the requisite raw material is rapidly decreasing, the production is limited.

Louisiana led in the production of hewed staves, with 46 per cent of the total number. Mississippi, which ranked second, was the only state which reported a greater quantity of hewed staves in 1909 than in 1908.

French claret staves formed 84.2 per cent of the total number of hewed staves in 1909 and pipe staves 13.1 per cent. Louisiana led in the production of French claret staves with 53.5 per cent of the total, and was followed by Mississippi and Texas, with 17.4 per cent and 16.9 per cent, respectively. Of the pipe staves, 62.5 per cent were reported by Mississippi and 21.2 per cent by Kentucky.

Table 8 shows the production of each class of beer and ale staves, by states, in 1909.

In 1909 the production of beer and ale staves was reported from 10 states. Staves of this class are much thicker in proportion to their length than other tight staves. Like bucked and split staves and hewed staves, they require a fine quality of white oak as material.

TABLE 8.—*Tight cooperage stock—Quantity of beer and ale staves produced, by classes and by states: 1909.*

STATE.	Total (thousands).	BEER.					ALE.		
		Barrel (thousands).	Half barrel (thousands).	Quarter barrel (thousands).	Sixth barrel (thousands).	Eighth barrel (thousands).	Hogshead (thousands).	Barrel (thousands).	Half barrel (thousands).
United States	16,547	1,560	6,217	5,399	1,056	2,058	145	68	44
Alabama	150	....	....	150	....	....	....	....	....
Arkansas	2,105	395	919	595	....	169	13	....	14
Kentucky	9,850	811	3,588	3,365	943	1,128	12	3	....
Louisiana	135	30	80	....	....	....	25	....	....
Minnesota	76	8	16	22	....	30	....	....	....
Mississippi	2,500	187	1,012	776	60	358	12	65	30
Oregon	69	10	24	20	5	....	10	....	....
Tennessee	1,117	....	327	399	18	373	....	....	....
Texas	305	70	170	....	....	....	65	....	....
West Virginia	240	49	81	72	30	....	8	....	....

Beer staves formed 98.4 per cent of the total output of beer and ale staves in 1909 and 93.6 per cent in 1908. Of the beer staves reported in 1909, 38.2 per cent were half-barrel; 33.1 per cent, quarter-barrel; 12.6 per cent, eighth-barrel; 9.6 per cent, barrel; and 6.5 per cent, sixth-barrel. Kentucky was the leading state in the production of all sizes of beer staves. About 77 per cent of the beer-barrel staves were reported from Arkansas and Kentucky, and 88.8 per cent of the half-barrel staves from Kentucky, Mississippi, and Arkansas; while Kentucky, Tennessee, and Mississippi, ranking in the order named, contributed 90.3 per cent of the eighth-barrel staves.

Ale staves formed less than 2 per cent of the beer and ale staves in 1909, as compared with 6.4 per cent in 1908. In 1909, 56.4 per cent of the ale staves were hogshead staves, whereas in 1908 only 25.8 per cent were of this size. Mississippi reported more ale staves in 1909 than any other state.

HEADING.

In Table 9 the production of each class of tight cooperage heading in 1909 is shown by states.

Although the total quantity of heading produced was slightly greater in 1909 than in 1908, decreases are shown for all but one of the classes of sawed heading for which statistics are presented separately, and also for the barrel size of beer and ale heading.

TABLE 9.—*Tight cooperage stock—Quantity of heading produced, by classes and by states: 1909.*

STATE.	Aggregate.	SAWED.							BEER AND ALE.				
		Total (sets).	Oil and tierce (sets).	Spirit and wine (sets).	Half-barrel and keg (sets).	Bourbon (sets).	Pork (sets).	All other (sets).	Total (sets).	Half-barrel (sets).	Barrel (sets).	Hogshead (sets).	All other (sets).
United States	20,691,201	19,735,693	9,172,099	2,207,596	1,680,004	1,289,713	393,319	4,992,962	955,508	342,735	91,050	150	521,573
Arkansas	6,396,860	6,334,860	3,792,107	1,081,458	196,466	344,354	351,744	568,731	62,000	11,500	20,350	150	30,000
Indiana	153,500	153,500	48,500	...	105,000	...	...	...	...	...	...	...	...
Kentucky	1,482,695	672,462	215,529	119,943	88,000	134,500	...	114,490	810,233	301,800	69,200	...	439,233
Louisiana	864,739	864,739	406,604	124,783	34,354	169,550	...	129,448	...	...	...	...	...
Maine	489,005	489,005	...	...	...	...	...	489,005	...	...	...	...	...
Michigan	48,575	48,575	...	...	...	...	41,575	7,000	...	...	...	...	...
Mississippi	2,362,618	2,362,118	1,040,170	243,493	57,796	306,618	...	714,041	500	...	...	...	500
Missouri	557,744	557,744	...	...	102,533	...	...	455,211	...	...	...	...	...
New Hampshire	1,860,000	1,860,000	1,000,000	...	200,000	...	...	660,000	...	...	...	...	...
New York	45,000	45,000	...	...	...	...	...	45,000	...	...	...	...	...
North Carolina	215,412	215,412	...	...	...	...	...	215,412	...	...	...	...	...
Tennessee	3,694,532	3,615,557	1,951,054	472,419	556,855	313,405	...	321,824	78,975	27,635	...	...	51,340
Virginia	445,676	445,676	76,676	4,000	40,000	5,000	...	320,000	...	...	...	...	...
West Virginia	293,051	293,051	120,765	4,000	155,000	9,286	...	4,000	...	...	...	...	...
Wisconsin	480,000	480,000	...	...	30,000	...	...	450,000	...	...	...	...	...
All other states [1]	1,301,794	1,297,994	520,694	157,500	114,000	7,000	...	498,800	3,800	1,800	1,500	...	500

[1] Includes Alabama, California, Florida, Georgia, Minnesota, Ohio, Pennsylvania, Texas, and Washington.

Sawed heading formed 95.4 per cent of the total quantity of heading produced in 1909. Of the 19,735,693 sets of sawed heading reported in that year, oil and tierce heading formed 46.5 per cent; spirit and wine heading, 11.2 per cent; half-barrel and keg heading, 8.5 per cent; Bourbon heading, 6.5 per cent; pork heading, 2 per cent; and "All other" sawed heading, 25.3 per cent. The production shown for the last group includes a large quantity of sirup and molasses heading, though over 70 per cent represents heading for which the class was not specified. Two classes of sawed heading, the pork and the half-barrel and keg, are shown separately in this report for the first time.

The center of the sawed heading industry was in the South Central states. Arkansas, Tennessee, and Mississippi reported 12,312,535 sets, or 62.4 per cent of the total quantity of this kind of heading produced in 1909. Of the 21 states which were credited with the balance of the sawed heading, New Hampshire alone reported nearly 4.5 per cent of the total. In 1908 the leading states were Arkansas, Tennessee, and Kentucky, which together contributed 66.6 per cent of the total quantity of sawed heading reported in that year.

Of the oil and tierce heading produced in 1909, 7,783,331 sets, or 84.9 per cent, were reported by Arkansas, Tennessee, Mississippi, and New Hampshire. The same states, exclusive of New Hampshire, were credited with 1,797,370 sets of the spirit and wine heading, or 81.4 per cent of the total of this class of heading. Tennessee, New Hampshire, and Arkansas reported 953,321 sets of the half-barrel and keg heading, or 56.7 per cent of the total for this class, while Arkansas, Tennessee, and Mississippi reported 964,377 sets of the Bourbon heading, or 74.8 per cent of the total. Nearly 90 per cent of the pork heading was reported from Arkansas.

Of the beer and ale heading, over 35 per cent was half-barrel heading, while nearly one-half was quarter-barrel heading, which is included in the class designated "All other." The balance of the latter class was made up of eighth-barrel heading. In 1909, for the first time, the production of the hogshead class of beer and ale heading is shown separately.

The manufacture of beer heading, which requires white oak timber of the best grade, is confined to a very limited number of states. Kentucky led, with nearly 85 per cent of the total production.

Table 10 shows the quantity of sawed heading produced in 1909, by kind of wood and by class.

TABLE **10.**—*Tight cooperage stock—Quantity of sawed heading produced, by kinds of wood and by classes: 1909.*

CLASS.	Total (sets).	White oak (sets).	Red oak (sets).	Pine (sets).	Gum (sets).	Ash (sets).	Basswood (sets).	All other (sets).
Total	19,735,693	11,706,810	2,252,820	2,139,005	1,812,333	672,394	489,800	662,531
Oil and tierce	9,172,099	6,154,313	1,789,339	1,000,000	75,000	138,947	....	14,500
Spirit and wine	2,207,596	2,196,050	9,046	....	....	....	....	2,500
Half barrel and keg	1,680,004	943,986	95,010	100,000	250,000	116,634	....	174,374
Bourbon	1,289,713	1,289,713	....	....	....	....	....	....
Pork	393,319	91,330	117,147	....	....	184,842	....	....
All other	4,992,962	1,031,418	242,278	1,039,005	1,487,333	231,971	489,800	471,157

In the reports as to the production of sawed heading in 1909 a remarkable decrease in the use of oak was indicated, while increases were shown for pine, gum, ash, and basswood.

White oak heading, which in 1908 formed about 70 per cent of the total quantity of sawed heading produced, constituted in 1909 only 59.3 per cent of the total. Of the white oak heading produced in the later year, 52.6 per cent was oil and tierce heading; 18.8 per cent, spirit and wine; 11 per cent, Bourbon; and 8.1 per cent, half-barrel and keg. For Bourbon heading, white oak was used exclusively. Red oak heading, nearly four-fifths of which was of the oil and tierce class, formed 11.4 per cent of the sawed heading in 1909, compared with 15.9 per cent in 1908.

Pine heading, shown separately for the first time in 1909, comprised 10.8 per cent of the sawed heading, and of this, one-half was of the oil and tierce class.

The production of gum heading was much greater in 1909 than in 1908. Of ash and basswood heading, the latter shown separately for the first time, relatively small quantities were reported in 1909.

EXPORTS.

In Table 11 are shown the quantity and value of the staves exported from the United States in the fiscal years ending June 30, 1904 to 1910.

TABLE 11.—*Quantity and value of staves exported: 1904–1910.*

[Compiled from "Commerce and Navigation of the United States," Bureau of Statistics, Department of Commerce and Labor.]

FISCAL YEAR.	Quantity.	VALUE.	
		Total.	Average per thousand.
1910	49,783,771	$4,673,085	$93.87
1909	52,583,016	5,524,199	105.06
1908	61,696,949	6,016,690	97.52
1907	51,120,171	5,127,522	100.30
1906	57,586,378	4,699,877	81.61
1905	48,286,285	3,613,635	74.84
1904	47,420,095	4,032,344	85.03

The quantity and value of staves exported in 1910 were less than in any other year since 1905; and the average value per thousand was less than in any other year since 1906. No information is available as to the kind of wood or the classes of staves represented in the exports. Since, however, a large part of the staves were shipped each year from New Orleans, which is the nearest port to the chief center of tight-stave production in the country, and since those exported have a high average value per thousand, it is highly probable that most of them were tight-barrel staves.

The value of heading exported during the year ending June 30, 1910, was $223,038. On the basis of the average value per set of the tight heading produced in 1909, this value would represent 1,249,100 sets of heading, which is equal to about 6 per cent of the quantity of tight heading produced during the calendar year 1909.

In addition to the above, the figures for exports during the fiscal year of 1910 include 928,197 "All other shooks." Under this head are classed knocked-down barrels, including staves, sets of heading, hoops, etc. Their total value was $1,654,611, or $1.72 per shook.

VENEERS.

The veneer industry has shown steady and rapid growth in the past few years, the quantity of wood consumed by the 637 establishments which reported in 1909 being 435,981,000 feet, log scale, compared with 382,542,000 feet consumed by 402 establishments in 1908 and 348,523,000 feet by 370 establishments in 1907. This was an increase in 1909 of 53,439,000 feet of logs, or 14 per cent, over the quantity used in 1908, and of 87,458,000 feet, or 25.1 per cent, over that of 1907. This is due chiefly to the greater completeness of the canvass in 1909, which was the year of the decennial census. In 1909, however, the quantity of raw material in the form of logs consumed per establishment was much less than in 1907 or 1908.

Table 1 shows the quantity of wood used, by kind, in 1907, 1908, and 1909.

It will be seen from Table 1 that for 11 woods a consumption of over 13,000,000 feet each in 1909 was reported, the aggregate consumption of these woods amounting to 391,072,000 feet, or 89.7 per cent of the total quantity used.

Red gum, the leading wood in all three years for which figures are given in the table, has made the greatest gains in respect to quantity consumed, nearly 27,000,000 feet more of this species being used in 1909 than in 1907. Among the 12 leading kinds of wood used, cottonwood alone showed a consumption in 1909 less than that of either 1908 or 1907. The great growth in the consumption of red gum indicates the lines along which the industry has been developing most rapidly, namely, in connection with the manufacture of packing boxes, baskets, and barrels, for the making of which articles this wood is chiefly used, while the more moderate gains reported for kinds of wood like birch, maple, oak, and beech represent the growth in the manufacture of "built-up" lumber, which is gradually taking the place of high-grade lumber for certain uses demanding strength or beauty of finish, such as doors, furniture, interior finish, and panels.

Of the other woods reported, yellow pine ranked second in quantity consumed in 1909, with 48,143,000 feet, log scale, and in 1908 with 42,342,000 feet, and third in 1907 with 32,450,000 feet. Maple, which ranked third in 1909, held fourth place in 1908 and fifth in 1907. Cottonwood was fourth in 1909, third in 1908, and second in 1907, and yellow poplar was fifth in 1909 and 1908, and fourth in 1907, while white oak, birch, and tupelo were sixth, seventh, and eighth, respectively, in all three years.

The quantity of wood included under the caption "All other" is much smaller in 1909 than in the other years, chiefly because a considerably larger number of woods are shown separately in 1909.

Of the imported woods, only mahogany and Spanish cedar were reported separately in 1907. Marked increases in the quantities of both woods were reported in 1908 and, in the case of mahogany, in 1909; but the quantity of Spanish cedar used in 1909 was less than in 1908, though greater than in 1907. The quantities of maple, birch, and beech, which are woods imported from Canada, remained about the same in 1909 as in 1908.

TABLE 1.—*Veneers—Quantity of wood consumed, by kind: 1909, 1908, and 1907.*

KIND OF WOOD.	QUANTITY (M FEET, LOG SCALE).		
	1909	1908	1907
Total	435,981	382,542	348,523
Domestic:			
Red gum	129,930	119,485	102,932
Yellow pine	48,143	42,342	32,450
Maple	35,444	27,886	28,175
Cottonwood	30,842	33,904	33,174
Yellow poplar	28,826	22,898	28,764
White oak	28,742	20,700	23,872
Birch	24,643	17,769	18,079
Tupelo	18,476	16,442	15,097
Elm	16,254	12,714	12,615
Basswood	13,715	11,609	13,561
Beech	9,950	8,515	4,367
Red oak	6,661	4,449	4,629
Sycamore	4,404	5,279	3,554
Spruce	4,111	5,413	6,060
Ash	2,703	2,490	2,818
Walnut	2,400	5,176	3,952
Chestnut	1,577	1,138	400
Sugar pine	1,192	942	(1)
Douglas fir	1,111	333	90
White pine	708	232	(1)
Magnolia	252	315	90
Buckeye	213	225	118
Hickory	210	192	100
Hemlock	207	349	233
Cypress	202	153	(1)
Cedar	101	104	(1)
Larch	100	101	(1)
Willow	60	(1)	(1)
Locust	58	(1)	(1)
Yucca	56	(1)	(1)
Cherry	49	54	20
Holly	18	60	(1)
Cucumber	14	(1)	(1)
All other	59	1,255	1,729
Imported:			
Mahogany	16,057	11,487	6,722
Spanish cedar	5,140	6,558	3,922
Maple	1,025	1,000	(1)
Circassian walnut	809	170	(1)
Birch	500	500	(1)
Beech	500	300	(1)
White oak	463	(1)	(1)
Elm	25	(1)	(1)
Satinwood	15	3	(1)
Rosewood	15	(1)	(1)
Ebony	1	(1)	(1)
All other	....	....	1,000

[1] Not reported separately.

Table 2 shows the quantity and cost of the wood used in the manufacture of veneers in 1909, by kind:

TABLE 2.—*Veneers—Quantity and cost of wood consumed, by kind: 1909.*

KIND OF WOOD.	MATERIAL USED.		
	Quantity (M feet, log scale).	Cost.	Average cost per 1,000 feet, log scale.
Total	435,981	$8,977,516	$20.59
Domestic:			
Red gum	129,930	1,444,534	11.12
Yellow pine	48,143	339,647	7.05
Maple	35,444	547,488	15.45
Cottonwood	30,842	420,392	13.63
Yellow poplar	28,826	601,992	20.88
White oak	28,742	1,336,527	46.50
Birch	24,643	388,989	15.78
Tupelo	18,476	178,999	9.69
Elm	16,254	283,462	17.44
Basswood	13,715	276,996	20.20
Beech	9,950	137,524	13.82
Red oak	6,661	213,248	32.01
Sycamore	4,404	57,544	13.07
Spruce	4,111	55,662	13.54
Ash	2,703	57,091	21.12
Walnut	2,400	166,452	69.36
Chestnut	1,577	19,279	12.23
Sugar pine	1,192	22,541	18.91
Douglas fir	1,111	16,307	14.68
White pine	708	11,692	16.51
Magnolia	252	2,738	10.87
Buckeye	213	2,388	11.21
Hickory	210	3,677	17.51
Hemlock	207	2,475	11.96
Cypress	202	3,726	18.45
Cedar	101	2,060	20.40
Larch	100	1,200	12.00
Willow	60	540	9.00
Locust	58	812	14.00
Yucca	56	1,120	20.00
Cherry	49	991	20.22
Holly	18	816	45.33
Cucumber	14	308	22.00
All other	59	459	7.78
Imported:			
Mahogany	16,057	1,565,598	97.50
Spanish cedar	5,140	473,831	92.19
Maple	1,025	15,400	15.02
Circassian walnut	809	257,531	318.33
Birch	500	7,500	15.00
Beech	500	6,000	12.00
White oak	463	46,300	100.00
Elm	25	400	16.00
Satinwood	15	3,000	200.00
Rosewood	15	2,100	140.00
Ebony	1	180	180.00

In 1909, 94.4 per cent of the total quantity of wood consumed in veneer manufacture was domestic wood, compared with 94.8 per cent in 1908. The total cost of the domestic material consumed in 1909 was $6,599,676, or 73.5 per cent of the cost of all the wood used in this industry. This was a somewhat greater relative cost than in 1908. The average cost per 1,000 feet, log scale, of the domestic wood was $16.04 in 1909, compared with $15.38 in 1908, while the imported wood showed a decrease in average cost from $115.67 in 1908 to $96.86 in 1909.

The diminishing supply of easily available logs suitable for the manufacture of veneers, together with the varying grades of logs used, tends to make the cost per 1,000 feet, log scale, change from year to year. In 1909 over 1,000,000 feet of logs were used of each of 19 kinds of domestic wood. The greatest changes in the cost per 1,000 feet, log scale, of these woods since 1908 were increases in the cost of walnut from $60.53 in 1908 to $69.36 in 1909, and in that of red oak from $28.63 in 1908 to $32.01 in 1909. There were also three kinds of imported wood of which more than 1,000,000 feet, log scale, were consumed. In the case of two of these, mahogany and Spanish cedar, the reported decrease in cost per 1,000 feet, log scale, was $31.20 and $29.33, respectively. Under the name "mahogany" are imported logs of several widely different species, which vary greatly in value as well as in texture and in grain or figure. The greatest increase in average cost in the case of any wood was the advance in the cost of Circassian walnut from $89.71 per 1,000 feet in 1908 to $318.33 in 1909.

Table 3 shows the consumption of wood in the manufacture of veneers, by kind and by states, in 1909.

The consumption of logs in veneer manufacture in 1909 occurred principally in Illinois, Michigan, Florida, Wisconsin, Indiana, Tennessee, Missouri, and Arkansas, ranking in the order named. Each of these eight states reported a consumption of over 25,000,000 feet, log scale, and together reported 249,658,000, or 57.2 per cent of the total consumption.

Of the 29 states reported separately, both in 1908 and in 1909, 12 showed decreases in the amount of wood consumed in the later year. The principal gains in quantity consumed in 1909 were in Michigan, Arkansas, Virginia, and New York, all of which states report gains of over 8,000,000 feet. The largest decreases occurred in Tennessee, Texas, and Illinois, each of which reported a decrease of between 4,000,000 and 5,000,000 feet.

In 1909 red gum was the principal kind of wood consumed in 11 of the 34 states which reported the manufacture of veneers, and it was the chief wood used in four of the eight leading states named above—Arkansas, Illinois, Missouri, and Tennessee. In Florida yellow pine formed 97.2 per cent of the wood used, and in Georgia it formed 89 per cent. In Indiana 43.9 per cent of the wood consumed in the manufacture of veneer was white oak, while in Ohio this wood formed 41.2 per cent. Maple was used principally in Michigan and in New York, and formed 45.9 per cent of the total quantity of wood consumed in the former state and 31.6 per cent in the latter. Cottonwood was used chiefly in Tennessee, Missouri, Illinois, and Arkansas. Yellow poplar formed 39.5 per cent of the wood used for veneer in North Carolina. Birch formed 50.5 per cent of the wood used in Maine and 51.1 per cent of that used in Wisconsin.

Of the imported woods 52.7 per cent of the mahogany was used in Illinois and 30.3 per cent in New York. New York led in the consumption of Spanish cedar for veneers, with 61 per cent of the total quantity used. New York also reported 64.3 per cent of the Circassian walnut, and all of the imported white oak, elm, and satinwood. Vermont reported all of the imported birch and beech.

Veneers are prepared by three processes—rotary cutting, sawing, and slicing. By the first-named process 85.2 per cent of the logs were cut in 1908, and 89.7 per cent in 1909. More than 90 per cent of the quantity reported for each of the 12 principal domestic woods, with the exception of white oak, was rotary cut in 1909, the proportion exceeding 95 per cent in the case of red gum, cottonwood, birch, tupelo, elm, and basswood. Of the total amount of wood sawed or sliced, white oak formed 41.9 per cent, and mahogany 17.5 per cent. Of the total quantity of white oak used in the manufacture of veneer, 65.6 per cent was sawed or sliced, and of the mahogany 49 per cent.

Table 4 shows the quantity of wood consumed in the manufacture of veneers in 1909 for each thickness of stock manufactured.

Veneer was rotary-cut in 35 different thicknesses, from five-sixteenths of an inch in thickness down to one-fiftieth of an inch. As in 1908, most of the rotary-cut veneer is in thicknesses which are multiples of one-sixteenth of an inch. The amount of timber used for veneers which was cut four-sixteenths, three-sixteenths, and two-sixteenths of an inch in thickness formed 52.6 per cent of the total quantity reported as rotary-cut. Nearly one-half of all rotary-cut veneer and the bulk of that made from red gum and yellow pine were cut into heavy stock, three-sixteenths of an inch or thicker. Less than 1 per cent of the rotary-cut mahogany was manufactured into stock of more than one-sixteenth of an inch in thickness.

Veneer was sawed or sliced in 24 different thicknesses, from five-sixteenths of an inch to one one-hundred-and-tenth of an inch, 37 per cent of the stock produced by sawing or slicing being one-twentieth of an inch thick.

Thin veneers, especially those from imported cabinet woods and from domestic woods such as white oak, maple, and walnut, are still used for furniture and interior finish, while veneers of gum, pine, yellow poplar, tupelo, and birch are principally used in making packing cases of various kinds, baskets, barrels, tobacco screens, and "built-up," or laminated lumber, often found in panel stock. The thicker veneers are often used as reenforcing for boxes or crates, as well as for many purposes for which thicker lumber was formerly used. The Spanish cedar cut three-sixteenths and one-eighth of an inch in thickness is used largely for cigar boxes, while that cut one one-hundredth of an inch or less in thickness is used as a covering of cheaper woods in cigar boxes.

TABLE 3.—*Veneers—Quantity, in thousand feet, log*

	KIND OF WOOD.	Total.	Alabama.	Arkansas.	California.
	Total	435,981	14,565	26,116	1,716
	Domestic:				
1	Red gum	129,930	6,632	20,925	...
2	Yellow pine	48,143	1,813	...	...
3	Maple	35,444	25	164	...
4	Cottonwood	30,842	75	3,600	...
5	Yellow poplar	28,826	1,770	110	...
6	White oak	28,742	...	50	...
7	Birch	24,643	...	299	...
8	Tupelo	18,476	3,841	216	...
9	Elm	16,254	75	125	...
10	Basswood	13,715	...	...	...
11	Beech	9,950	70	...	...
12	Red oak	6,661	6	16	...
13	Sycamore	4,404	2	601	15
14	Spruce	4,111	...	...	42
15	Ash	2,703	4	10	...
16	Walnut	2,400	...	...	2
17	Chestnut	1,577	...	...	...
18	Sugar pine	1,192	...	...	1,192
19	Douglas fir	1,111	...	...	...
20	White pine	708	...	...	359
21	Magnolia	252	89	...	...
22	Buckeye	213	...	...	...
23	Hickory	210	20	...	...
24	Hemlock	207	...	...	...
25	Cypress	202	...	...	...
26	Cedar	101	...	...	...
27	Larch	100	...	...	...
28	Willow	60	...	...	...
29	Locust	58	...	...	...
30	Yucca	56	...	...	56
31	Cherry	49	...	...	...
32	Holly	18	...	...	...
33	Cucumber	14	...	...	...
34	All other	59	...	...	50
	Imported:				
35	Mahogany	16,057	51	...	...
36	Spanish cedar	5,140	67	...	...
37	Maple	1,025	...	...	...
38	Circassian walnut	809	25	...	...
39	Birch	500	...	...	...
40	Beech	500	...	...	...
41	White oak	463	...	...	...
42	Elm	25	...	...	...
43	Satinwood	15	...	...	...
44	Rosewood	15	...	...	...
45	Ebony	1	...	...	...

scale, of wood used, by kind and by states: 1909.

Delaware.	Florida.	Georgia.	Illinois.	Indiana.	Kentucky.	Louisiana.	
3,657	33,293	6,980	35,646	31,472	19,356	3,164	
1,205	480	369	13,954	6,378	14,829	178	1
742	32,371	6,212	176	....	27	202	2
75	10	1	460	3,051	36	....	3
....	....	18	4,256	100	40	2,559	4
160	....	380	825	2,061	2,129	....	5
20	....	....	2,475	13,827	1,372	....	6
....	....	....	....	15	....	....	7
1,185	10	....	1,218	....	....	187	8
....	10	....	210	1,449	27	....	9
....	....	....	....	482	50	....	10
....	....	....	25	1,558	....	....	11
30	30	....	50	811	119	....	12
100	....	....	1,966	511	27	....	13
....	....	....	....	....	....	....	14
....	....	....	....	310	19	....	15
10	....	....	1,492	310	19	....	16
20	....	....	....	....	36	....	17
....	....	....	....	....	....	....	18
....	....	....	....	....	....	....	19
....	....	....	....	....	....	....	20
....	65	....	....	....	....	88	21
....	....	....	....	4	....	....	22
10	42	....	....	15	3	....	23
....	....	....	....	....	....	....	24
....	....	....	40	....	1	....	25
100	....	....	....	....	1	....	26
....	....	....	....	....	....	....	27
....	....	....	....	....	....	....	28
....	....	....	....	....	....	....	29
....	....	....	....	....	....	....	30
....	....	....	....	5	....	....	31
....	....	....	....	....	....	....	32
....	....	....	....	....	....	....	33
....	....	....	....	....	....	....	34
....	....	....	8,466	505	572	....	35
....	275	....	....	....	48	....	36
....	....	....	....	....	....	....	37
....	....	....	33	80	1	....	38
....	....	....	....	....	....	....	39
....	....	....	....	....	....	....	40
....	....	....	....	....	....	....	41
....	....	....	....	....	....	....	42
....	....	....	....	....	....	....	43
....	....	....	....	....	....	....	44
....	....	....	....	....	....	....	45

TABLE 3.—*Veneers—Quantity, in thousand feet, log scale,*

	KIND OF WOOD.	Maine.	Maryland.	Massachusetts.	Michigan.
	Total	3,637	8,796	690	33,455
	Domestic:				
1	Red gum		3,949		
2	Yellow pine		335		
3	Maple	100	10	224	15,350
4	Cottonwood			166	234
5	Yellow poplar		591		
6	White oak		249	40	245
7	Birch	1,838	75		1,875
8	Tupelo		1,932		
9	Elm		25		6,844
10	Basswood	1,199			3,660
11	Beech				2,905
12	Red oak		155		369
13	Sycamore		400		168
14	Spruce	500			
15	Ash		42		597
16	Walnut		51	1	20
17	Chestnut		950		
18	Sugar pine				
19	Douglas fir				
20	White pine				
21	Magnolia				
22	Buckeye				
23	Hickory				
24	Hemlock				13
25	Cypress				
26	Cedar				
27	Larch				
28	Willow				
29	Locust				
30	Yucca				
31	Cherry				34
32	Holly				
33	Cucumber				
34	All other				
	Imported:				
35	Mahogany		30	257	1,141
36	Spanish cedar		2		
37	Maple				
38	Circassian walnut			2	
39	Birch				
40	Beech				
41	White oak				
42	Elm				
43	Satinwood				
44	Rosewood				
45	Ebony				

of wood used, by kind and by states: 1909—Continued.

Mississippi.	Missouri.	New Jersey.	New York.	North Carolina.	Ohio.	Oregon.	
7,563	27,365	1,046	24,218	19,984	10,985	3,291	
3,052	18,208	104	....	3,263	398	....	1
1,155	....	....	....	1,752	....	....	2
....	370	30	7,658	....	821	12	3
2,249	4,883	....	256	....	35	1,265	4
910	200	780	....	7,887	754	....	5
10	726	8	646	564	4,521	....	6
....	6	20	714	23	6	....	7
50	800	....	2	6,250	45	....	8
....	610	15	1,423	21	966	....	9
....	10	3	1,139	25	428	....	10
50	....	8	2,409	....	1,258	....	11
27	400	....	103	129	361	....	12
....	387	7	26	....	101	....	13
....	....	....	100	10	20	1,200	14
....	228	2	191	....	103	2	15
....	200	....	50	....	189	....	16
....	....	69	165	60	70	....	17
....	....	....	....	....	....	....	18
....	....	....	....	....	....	712	19
....	....	....	100	....	....	....	20
....	....	....	....	....	10	....	21
....	....	....	....	....	1	....	22
....	118	....	1	....	....	....	23
....	....	....	170	....	8	....	24
....	161	....	....	....	....	....	25
....	....	....	....	....	....	....	26
....	....	....	....	....	....	100	27
60	....	....	....	....	....	....	28
....	58	....	....	....	....	....	29
....	....	....	....	....	....	....	30
....	....	....	1	....	7	....	31
....	....	....	8	....	10	....	32
....	....	....	14	....	....	....	33
....	....	....	1	....	....	....	34
....	....	....	4,858	....	177	....	35
....	....	....	3,135	....	532	....	36
....	....	....	25	....	....	....	37
....	....	....	520	....	148	....	38
....	....	....	....	....	....	....	39
....	....	....	....	....	....	....	40
....	....	....	463	....	....	....	41
....	....	....	25	....	....	....	42
....	....	....	15	....	....	....	43
....	....	....	....	....	15	....	44
....	....	....	....	....	1	....	45

TABLE 3.—*Veneers—Quantity, in thousand feet, log scale,*

	KIND OF WOOD.	Pennsylvania.	South Carolina.	Tennessee.
	Total	3,691	2,944	30,574
	Domestic:			
1	Red gum		733	15,166
2	Yellow pine		538	317
3	Maple	1,093		560
4	Cottonwood			7,560
5	Yellow poplar	210	1,673	3,446
6	White oak	100		3,004
7	Birch	119		5
8	Tupelo			
9	Elm	188		65
10	Basswood	163		8
11	Beech	720		2
12	Red oak	22		75
13	Sycamore	1		80
14	Spruce			
15	Ash	22		
16	Walnut			
17	Chestnut	36		
18	Sugar pine			
19	Douglas fir			
20	White pine			
21	Magnolia			
22	Buckeye			205
23	Hickory			
24	Hemlock	15		
25	Cypress			
26	Cedar			
27	Larch			
28	Willow			
29	Locust			
30	Yucca			
31	Cherry	2		
32	Holly			
33	Cucumber			
34	All other			
	Imported:			
35	Mahogany			
36	Spanish cedar	1,000		81
37	Maple			
38	Circassian walnut			
39	Birch			
40	Beech			
41	White oak			
42	Elm			
43	Satinwood			
44	Rosewood			
45	Ebony			

of wood used, by kind and by states: 1909—Continued.

Texas.	Vermont.	Virginia.	Washington.	West Virginia.	Wisconsin.	All other states.[1]	
6,710	8,013	21,609	5,419	4,404	31,737	3,885	
5,765	.....	14,339	.....	3	.....	.....	1
690	.....	1,813	.....	.....	.....	.....	2
.....	2,682	10	38	75	2,336	253	3
250	.....	.....	2,722	20	.....	554	4
.....	.....	1,412	.....	3,528	.....	.....	5
.....	.....	88	1	295	101	400	6
.....	2,300	.....	.....	15	16,218	1,115	7
.....	.....	2,786	.....	4	.....	.....	8
5	95	.....	.....	.....	3,401	700	9
.....	175	.....	.....	90	5,783	500	10
.....	666	.....	.....	69	.....	210	11
.....	.....	1,047	.....	146	2,615	150	12
.....	.....	.....	.....	12	.....	.....	13
.....	.....	.....	2,239	.....	.....	.....	14
.....	95	29	20	.....	1,026	3	15
.....	.....	6	.....	50	.....	.....	16
.....	.....	79	.....	92	.....	.....	17
.....	.....	.....	.....	.....	.....	.....	18
.....	.....	.....	399	.....	.....	.....	19
.....	.....	.....	.....	.....	249	.....	20
.....	.....	.....	.....	.....	.....	.....	21
.....	.....	.....	.....	3	.....	.....	22
.....	.....	.....	.....	1	.....	.....	23
.....	.....	.....	.....	1	.....	.....	24
.....	.....	.....	.....	.....	.....	.....	25
.....	.....	.....	.....	.....	.....	.....	26
.....	.....	.....	.....	.....	.....	.....	27
.....	.....	.....	.....	.....	.....	.....	28
.....	.....	.....	.....	.....	.....	.....	29
.....	.....	.....	.....	.....	.....	.....	30
.....	.....	.....	.....	.....	.....	.....	31
.....	.....	.....	.....	.....	.....	.....	32
.....	.....	.....	.....	.....	.....	.....	33
.....	.....	.....	.....	.....	8	.....	34
.....	.....	.....	.....	.....	.....	.....	35
.....	.....	.....	.....	.....	.....	.....	36
.....	1,000	.....	.....	.....	.....	.....	37
.....	.....	.....	.....	.....	.....	.....	38
.....	500	.....	.....	.....	.....	.....	39
.....	500	.....	.....	.....	.....	.....	40
.....	.....	.....	.....	.....	.....	.....	41
.....	.....	.....	.....	.....	.....	.....	42
.....	.....	.....	.....	.....	.....	.....	43
.....	.....	.....	.....	.....	.....	.....	44
.....	.....	.....	.....	.....	.....	.....	45

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[1] Includes Oklahoma, Iowa, Minnesota, and New Hampshire.

TABLE 4.—*Veneers—Quantity, in thousand feet, log scale, of wood*

	KIND OF WOOD.	Aggregate.	ROTARY-CUT.			
			Total.	Thickness of product.		
				$\frac{5}{16}$ inch and over.	$\frac{13}{42}$ inch.	$\frac{9}{32}$ inch.
	Total	435,981	390,929	26,150	200	3,597
	Domestic:					
1	Red gum	129,930	128,691	16,343		
2	Yellow pine	48,143	45,114	100		
3	Maple	35,444	32,986	110		
4	Cottonwood	30,842	30,090	1,728		3,597
5	Yellow poplar	28,826	26,322	161		
6	White oak	28,742	9,884			
7	Birch	24,643	24,423	21		
8	Tupelo	18,476	17,858	5,675		
9	Elm	16,254	15,576	108	200	
10	Basswood	13,715	13,429	45		
11	Beech	9,950	9,203	71		
12	Red oak	6,661	6,066			
13	Sycamore	4,404	4,325	1,766		
14	Spruce	4,111	3,511			
15	Ash	2,703	2,535	1		
16	Walnut	2,400	2,243			
17	Chestnut	1,577	656	8		
18	Sugar pine	1,192	1,192			
19	Douglas fir	1,111	1,111			
20	White pine	708	601			
21	Magnolia	252	242			
22	Buckeye	213	210			
23	Hickory	210	204			
24	Hemlock	207	21	13		
25	Cypress	202	202			
26	Cedar	101	50			
27	Larch	100	100			
28	Willow	60	60			
29	Locust	58	58			
30	Yucca	56	56			
31	Cherry	49	49			
32	Holly	18	10			
33	Cucumber	14	14			
34	All other	59	3			
	Imported:					
35	Mahogany	16,057	8,184			
36	Spanish cedar	5,140	3,137			
37	Maple	1,025	1,025			
38	Circassian walnut	809	448			
39	Birch	500	500			
40	Beech	500	500			
41	White oak	463				
42	Elm	25	25			
43	Satinwood	15				
44	Rosewood	15	15			
45	Ebony	1				

consumed, by method of manufacture and thickness of stock: 1909.

ROTARY-CUT.								
Thickness of product.								
$\frac{1}{4}$ inch.	$\frac{7}{32}$ inch.	$\frac{1}{5}$ inch.	$\frac{3}{16}$ inch.	$\frac{1}{6}$ inch.	$\frac{5}{32}$ inch.	$\frac{2}{13}$ inch.	$\frac{1}{7}$ inch.	
52,044	1,313	13,563	95,402	12,163	7,255	155	9,842	
19,108	439	...	45,662	4,105	5,252	...	392	1
8,152	...	12,744	14,437	5,329	2,000	...	40	2
2,204	36	...	1,441	702	3	...	347	3
4,201	...	15	16,871	...	...	...	575	4
8,556	410	...	2,023	63	...	...	340	5
116	...	10	400	...	...	...	11	6
1,392	...	...	1,114	115	...	80	4,337	7
402	15	72	5,549	1	...	...	...	8
604	...	439	769	890	...	75	2,323	9
5,217	393	25	1,761	108	...	...	418	10
1,032	20	...	1,083	509	...	...	244	11
55	...	10	125	...	...	...	688	12
592	...	...	423	7	...	...	1	13
...	...	...	20	...	...	...	...	14
74	...	...	44	11	...	...	88	15
...	...	...	...	...	...	...	...	16
241	...	...	78	83	...	...	36	17
...	...	...	...	...	...	...	...	18
4	...	200	...	...	...	...	...	19
...	...	...	359	240	...	...	...	20
...	...	48	...	...	...	...	...	21
35	...	...	175	...	...	...	...	22
3	...	...	...	...	...	...	...	23
...	...	...	8	...	...	...	...	24
...	...	...	...	...	...	...	...	25
...	...	...	...	...	...	...	...	26
...	...	...	...	...	...	...	...	27
...	...	...	60	...	...	...	...	28
...	...	...	...	...	...	...	...	29
56	...	...	...	...	...	...	...	30
...	...	...	...	...	...	...	2	31
...	...	...	...	...	...	...	...	32
...	...	...	...	...	...	...	...	33
...	...	...	...	...	...	...	...	34
...	...	...	...	...	...	...	...	35
...	...	...	3,000	...	...	...	...	36
...	...	...	...	...	...	...	...	37
...	...	...	...	...	...	...	...	38
...	...	...	...	...	...	...	...	39
...	...	...	...	...	...	...	...	40
...	...	...	...	...	...	...	...	41
...	...	...	...	...	...	...	...	42
...	...	...	...	...	...	...	...	43
...	...	...	...	...	...	...	...	44
...	...	...	...	...	...	...	...	45

TABLE 4.—*Veneers—Quantity, in thousand feet, log scale, of wood*

	KIND OF WOOD.	ROTARY-CUT.			
		Thickness of product.			
		$\frac{1}{8}$ inch.	$\frac{1}{9}$ inch.	$\frac{1}{10}$ inch.	$\frac{3}{32}$ inch.
	Total	58,000	10,294	10,590	618
	Domestic:				
1	Red gum	15,034	9,996	1,089	10
2	Yellow pine	1,061		550	176
3	Maple	7,013		2,483	
4	Cottonwood	2,616		12	
5	Yellow poplar	8,269			125
6	White oak	521			
7	Birch	5,324		253	
8	Tupelo	2,866		2,479	
9	Elm	5,249	229	1,221	
10	Basswood	2,618	69	863	300
11	Beech	990		30	
12	Red oak	3,173		2	
13	Sycamore	492		400	7
14	Spruce	42			
15	Ash	990		16	
16	Walnut	21			
17	Chestnut	174			
18	Sugar pine			1,192	
19	Douglas fir	907			
20	White pine				
21	Magnolia	75			
22	Buckeye				
23	Hickory	119			
24	Hemlock				
25	Cypress	201			
26	Cedar				
27	Larch	100			
28	Willow				
29	Locust	58			
30	Yucca				
31	Cherry	9			
32	Holly				
33	Cucumber				
34	All other	3			
	Imported:				
35	Mahogany	75			
36	Spanish cedar				
37	Maple				
38	Circassian walnut				
39	Birch				
40	Beech				
41	White oak				
42	Elm				
43	Satinwood				
44	Rosewood				
45	Ebony				

consumed, by method of manufacture and thickness of stock: 1909—Continued.

ROTARY-CUT—continued.								
Thickness of product—Continued.								
$\frac{1}{11}$ inch.	$\frac{1}{12}$ inch.	$\frac{1}{14}$ inch.	$\frac{1}{15}$ inch.	$\frac{1}{16}$ inch.	$\frac{1}{17}$ inch.	$\frac{1}{18}$ inch.	$\frac{1}{20}$ inch.	
225	9,348	285	78	37,355	185	2,106	17,328	
....	1,652	....	....	6,183	....	310	1,316	1
....	....	....	....	200	....	100	....	2
....	1,518	....	60	4,054	....	687	2,863	3
....	9	....	....	125	....	....	266	4
150	1,187	....	....	1,079	185	300	1,930	5
....	115	....	....	5,933	....	6	2,609	6
1	2,907	....	9	4,633	....	35	2,683	7
....	186	....	....	434	....	....	43	8
....	357	252	9	2,339	....	90	372	9
2	643	33	....	629	....	69	120	10
2	606	....	....	2,029	....	121	471	11
30	32	....	....	1,561	....	138	227	12
....	59	....	....	208	....	20	325	13
....	....	....	....	270	....	....	985	14
....	....	....	....	808	....	220	262	15
....	5	....	....	....	....	....	1,679	16
....	10	....	....	25	....	....	1	17
....	....	....	....	....	....	....	....	18
....	....	....	....	....	....	....	....	19
....	....	....	....	1	....	....	1	20
....	....	....	....	65	....	10	30	21
....	....	....	....	....	....	....	....	22
40	5	....	....	12	....	....	....	23
....	....	....	....	....	....	....	....	24
....	....	....	....	1	....	....	....	25
....	50	....	....	....	....	....	....	26
....	....	....	....	....	....	....	....	27
....	....	....	....	....	....	....	....	28
....	....	....	....	....	....	....	....	29
....	....	....	....	....	....	....	....	30
....	7	....	....	1	....	....	....	31
....	....	....	....	....	....	....	....	32
....	....	....	....	14	....	....	....	33
....	....	....	....	....	....	....	....	34
....	....	....	....	6,701	....	....	1,145	35
....	....	....	....	....	....	....	....	36
....	....	....	....	25	....	....	....	37
....	....	....	....	....	....	....	....	38
....	....	....	....	....	....	....	....	39
....	....	....	....	....	....	....	....	40
....	....	....	....	....	....	....	....	41
....	....	....	....	25	....	....	....	42
....	....	....	....	....	....	....	....	43
....	....	....	....	....	....	....	....	44
....	....	....	....	....	....	....	....	45

TABLE 4.—*Veneers—Quantity, in thousand feet, log scale, of wood*

	KIND OF WOOD.	ROTARY-CUT.			
		Thickness of product.			
		$\frac{1}{21}$ inch.	$\frac{1}{22}$ inch.	$\frac{1}{24}$ inch.	$\frac{1}{26}$ inch.
	Total	25	1,909	2,472	186
	Domestic:				
1	Red gum		1,223		
2	Yellow pine				
3	Maple	25			61
4	Cottonwood				
5	Yellow poplar		78	1,435	
6	White oak			30	
7	Birch			946	
8	Tupelo				
9	Elm		15		
10	Basswood		60	16	
11	Beech		154	25	125
12	Red oak				
13	Sycamore				
14	Spruce		379		
15	Ash				
16	Walnut				
17	Chestnut				
18	Sugar pine				
19	Douglas fir				
20	White pine				
21	Magnolia				
22	Buckeye				
23	Hickory			20	
24	Hemlock				
25	Cypress				
26	Cedar				
27	Larch				
28	Willow				
29	Locust				
30	Yucca				
31	Cherry				
32	Holly				
33	Cucumber				
34	All other				
	Imported:				
35	Mahogany				
36	Spanish cedar				
37	Maple				
38	Circassian walnut				
39	Birch				
40	Beech				
41	White oak				
42	Elm				
43	Satinwood				
44	Rosewood				
45	Ebony				

consumed, by method of manufacture and thickness of stock: 1909—Continued.

ROTARY-CUT—continued.								
Thickness of product—Continued.								
1/27 inch.	1/28 inch.	1/30 inch.	1/32 inch.	1/33 inch.	1/34 inch.	1/36 inch.	1/50 inch.	
206	1,706	13,866	998	1,065	129	270	1	
...	...	10	538	...	29	...	...	1
...	...	...	225	...	...	...	...	2
180	319	8,557	52	...	...	270	1	3
...	...	75	...	...	...	...	...	4
...	...	20	5	...	6	...	...	5
...	25	108	...	...	...	...	...	6
...	243	330	...	...	...	...	...	7
...	136	...	...	...	...	...	...	8
...	35	...	...	...	...	...	...	9
...	40	...	...	...	...	...	...	10
6	278	1,307	100	...	...	...	...	11
...	25	...	...	...	...	...	...	12
20	...	...	5	...	...	...	...	13
...	400	350	...	1,065	...	...	...	14
...	20	1	...	...	...	...	...	15
...	155	383	...	...	...	...	...	16
...	...	...	...	...	...	...	...	17
...	...	...	...	...	...	...	...	18
...	...	...	...	...	...	...	...	19
...	...	...	...	...	...	...	...	20
...	...	...	...	...	14	...	...	21
...	...	...	...	...	...	...	...	22
...	5	...	...	...	...	...	...	23
...	...	...	...	...	...	...	...	24
...	...	...	...	...	...	...	...	25
...	...	...	...	...	...	...	...	26
...	...	...	...	...	...	...	...	27
...	...	...	...	...	...	...	...	28
...	...	...	...	...	...	...	...	29
...	...	...	...	...	...	...	...	30
...	25	...	5	...	...	...	...	31
...	...	10	...	...	...	...	...	32
...	...	...	...	...	...	...	...	33
...	...	...	...	...	...	...	...	34
...	...	263	...	...	...	...	...	35
...	...	137	...	...	...	...	...	36
...	...	1,000	...	...	...	...	...	37
...	...	300	68	...	80	...	...	38
...	...	500	...	...	...	...	...	39
...	...	500	...	...	...	...	...	40
...	...	...	...	...	...	...	...	41
...	...	...	...	...	...	...	...	42
...	...	...	...	...	...	...	...	43
...	...	15	...	...	...	...	...	44
...	...	...	...	...	...	...	...	45

TABLE 4.—*Veneers—Quantity, in thousand feet, log scale, of wood*

	KIND OF WOOD.	SAWED OR SLICED.			
		Total.	Thickness of product.		
			$\frac{5}{16}$ inch and over.	$\frac{1}{4}$ inch.	$\frac{7}{32}$ inch.
	Total	45,052	3,510	2,624	48
	Domestic:				
1	Red gum	1,239			
2	Yellow pine	3,029	2,074	75	
3	Maple	2,458	301	894	
4	Cottonwood	752		502	
5	Yellow poplar	2,504		3	
6	White oak	18,858		23	
7	Birch	220	21	50	
8	Tupelo	618			
9	Elm	678	117	18	
10	Basswood	286	1	55	
11	Beech	747	251	50	
12	Red oak	595	58	19	
13	Sycamore	79	2	22	
14	Spruce	600	600		
15	Ash	168	21		
16	Walnut	157		1	
17	Chestnut	921		900	
18	Sugar pine				
19	Douglas fir				
20	White pine	107	57		
21	Magnolia	10			
22	Buckeye	3			
23	Hickory	6			
24	Hemlock	186	1		
25	Cypress				
26	Cedar	51			
27	Larch				
28	Willow				
29	Locust				
30	Yucca				
31	Cherry				
32	Holly	8			
33	Cucumber				
34	All other	56	6		
	Imported:				
35	Mahogany	7,873		12	
36	Spanish cedar	2,003			48
37	Maple				
38	Circassian walnut	361			
39	Birch				
40	Beech				
41	White oak	463			
42	Elm				
43	Satinwood	15			
44	Rosewood				
45	Ebony	1			

consumed, by method of manufacture and thickness of stock: 1909—Continued.

SAWED OR SLICED—continued.								
Thickness of product—Continued.								
$\frac{3}{14}$ inch.	$\frac{1}{5}$ inch.	$\frac{3}{16}$ inch.	$\frac{1}{6}$ inch.	$\frac{5}{32}$ inch.	$\frac{1}{8}$ inch.	$\frac{1}{9}$ inch.	$\frac{1}{10}$ inch.	
100	500	1,967	908	2,100	2,172	750	723	
		523			270			1
100	500		30		150			2
		215			129	750	166	3
		74						4
		60		2,099	167		150	5
			675		10			6
		25			51			7
		588			30			8
		10	172		16			9
		25	30		25			10
			1		10			11
					96			12
								13
								14
					130			15
				1	5			16
		10			11			17
								18
								19
		50						20
								21
		3						22
					6			23
					15			24
								25
					50			26
								27
								28
								29
								30
								31
								32
								33
								34
							407	35
		384			1,000			36
								37
								38
								39
								40
								41
								42
								43
								44
					1			45

TABLE 4.—*Veneers—Quantity, in thousand feet, log scale, of wood*

	KIND OF WOOD.	SAWED OR SLICED.				
		Thickness of product.				
		$\frac{1}{12}$ inch.	$\frac{1}{14}$ inch.	$\frac{1}{15}$ inch.	$\frac{1}{16}$ inch.	$\frac{1}{18}$ inch.
	Total	374	200	13	4,886	505
	Domestic:					
1	Red gum		200		220	
2	Yellow pine				100	
3	Maple					3
4	Cottonwood				10	
5	Yellow poplar	4				
6	White oak	95			1,734	452
7	Birch				5	50
8	Tupelo					
9	Elm				255	
10	Basswood				150	
11	Beech	225		10	200	
12	Red oak				300	
13	Sycamore				50	
14	Spruce					
15	Ash			3	14	
16	Walnut	50			3	
17	Chestnut					
18	Sugar pine					
19	Douglas fir					
20	White pine					
21	Magnolia					
22	Buckeye					
23	Hickory					
24	Hemlock				120	
25	Cypress					
26	Cedar					
27	Larch					
28	Willow					
29	Locust					
30	Yucca					
31	Cherry					
32	Holly					
33	Cucumber					
34	All other				50	
	Imported:					
35	Mahogany				1,675	
36	Spanish cedar					
37	Maple					
38	Circassian walnut					
39	Birch					
40	Beech					
41	White oak					
42	Elm					
43	Satinwood					
44	Rosewood					
45	Ebony					

consumed, by method of manufacture and thickness of stock: 1909—Continued.

SAWED OR SLICED—continued.								
Thickness of product—Continued.								
$\frac{1}{20}$ inch.	$\frac{1}{22}$ inch.	$\frac{1}{24}$ inch.	$\frac{1}{26}$ inch.	$\frac{1}{28}$ inch.	$\frac{1}{30}$ inch.	$\frac{1}{100}$ inch.	$\frac{1}{110}$ inch.	
16,688	15	1,527	15	2,264	2,592	436	135	
25				1				1
								2
								3
106				60				4
10				1	10			5
14,592	15	1,262						6
3				15				7
								8
90								9
								10
								11
117		5						12
5								13
								14
								15
14				1	82			16
								17
								18
								19
								20
				10				21
								22
								23
50								24
								25
					1			26
								27
								28
								29
								30
								31
					8			32
								33
								34
1,203		255	15	2,065	2,241			35
						436	135	36
								37
				111	250			38
								39
								40
463								41
								42
10		5						43
								44
								45

POLES, CROSS ARMS, BRACKETS, AND INSULATOR PINS PURCHASED.

POLES.

The statistics concerning poles purchased in the United States in 1909 were obtained by the correspondence method employed in securing those for the preceding year and are exceptionally complete. In addition to the figures for poles purchased, this bulletin contains data collected for the first time concerning cross arms, brackets, and insulator pins purchased. Reports on these accessories were obtained from practically every concern which uses poles.

Table 1 shows the total number and cost of poles purchased, by kind of wood and by class of purchaser, for 1909, 1908, and 1907.

TABLE 1.—*Poles purchased—Number and cost, by kind of wood and by class of purchaser: 1909, 1908, and 1907.*

KIND OF WOOD.	1909		1908		1907	
	Number.	Cost at point of purchase.	Number.	Cost at point of purchase.	Number.	Cost at point of purchase.
	ALL COMPANIES.					
Total	3,738,740	$7,073,826	3,249,154	$5,928,824	3,283,268	$8,081,768
Cedar	2,439,825	4,679,928	2,200,139	3,780,973	2,109,477	5,202,617
Chestnut	608,066	1,382,599	516,049	1,227,273	630,282	1,619,785
Oak	236,842	136,961	160,702	95,032	76,450	60,285
Pine	179,586	520,052	116,749	382,710	155,960	459,545
Cypress	77,677	117,496	90,579	148,070	100,368	307,974
Juniper	43,581	79,389	42,367	83,401	38,925	109,226
Tamarack	29,889	18,282	24,123	32,212	13,884	10,247
Douglas fir	24,877	35,266	19,542	80,024	15,919	40,720
Redwood	23,145	49,354	13,061	38,849	31,469	109,478
Osage orange	21,491	8,712	18,109	11,261	5,962	2,862
Spruce	11,423	17,857	8,088	23,136	10,646	28,939
Locust	10,463	9,164	10,224	8,233	4,672	3,722
All other	31,875	18,766	29,422	17,650	89,254	126,368
	TELEPHONE AND TELEGRAPH COMPANIES.					
Total	2,916,005	$4,081,251	2,562,239	$3,425,621	2,311,651	$3,977,019
Cedar	2,023,087	3,103,292	1,868,931	2,583,718	1,629,679	2,956,290
Chestnut	403,487	621,162	333,259	572,382	404,128	766,072
Oak	214,336	78,118	147,363	52,816	66,422	23,100
Pine	68,802	101,223	41,444	54,967	48,063	47,497
Cypress	40,129	34,643	48,942	47,555	22,981	24,647
Juniper	32,446	42,705	26,227	36,943	18,462	30,457
Tamarack	28,375	14,466	19,161	9,607	12,827	6,615
Douglas fir	18,293	14,401	8,737	9,870	6,691	3,964
Redwood	19,295	33,738	9,828	22,594	8,052	15,313
Osage orange	21,341	8,600	18,099	11,250	5,962	2,862
Spruce	5,633	4,789	2,973	3,425	1,869	2,384
Locust	10,241	8,603	10,187	8,173	4,598	3,580
All other	30,540	15,511	27,088	12,321	81,917	94,238

TABLE 1.—*Poles purchased—Number and cost, by kind of wood and by class of purchaser: 1909, 1908, and 1907*—Continued.

KIND OF WOOD.	1909		1908		1907	
	Number.	Cost at point of purchase.	Number.	Cost at point of purchase.	Number.	Cost at point of purchase.
	ELECTRIC RAILROAD AND ELECTRIC LIGHT AND POWER COMPANIES.					
Total	627,414	$2,438,886	531,497	$2,001,499	676,829	$3,275,973
Cedar	345,366	1,429,039	285,689	1,108,976	346,813	1,920,428
Chestnut	184,129	714,556	166,050	625,624	187,077	762,626
Oak	2,271	2,650	2,523	3,638	2,347	4,715
Pine	42,256	141,180	19,919	94,687	26,969	134,748
Cypress	28,793	72,592	30,619	84,663	71,136	275,594
Juniper	10,635	36,349	14,087	45,136	19,098	77,493
Tamarack	1,195	1,985	1,847	5,208	1,057	3,632
Douglas fir	5,826	18,506	3,766	8,366	3,408	9,284
Redwood	3,167	14,686	2,918	15,061	6,586	37,852
Osage orange[1]	....	....	....	....	....	....
Spruce	3,104	6,289	1,821	5,018	4,981	17,539
Locust	222	561	37	60	74	142
All other	450	493	2,221	5,062	7,283	31,920
	STEAM RAILROAD COMPANIES.					
Total	195,321	$553,689	155,418	$501,704	294,788	$828,776
Cedar	71,372	147,597	45,519	88,279	132,985	325,899
Chestnut	20,450	46,881	16,740	29,267	39,077	91,087
Oak	20,235	56,193	10,816	38,578	7,681	32,470
Pine	68,528	277,649	55,386	233,056	80,928	277,300
Cypress	8,755	10,261	11,018	15,852	6,251	7,733
Juniper	500	335	2,053	1,322	1,365	1,276
Tamarack[2]	319	1,831	....	....	....	....
Douglas fir	758	2,359	7,039	61,788	5,820	27,472
Redwood[2]	683	930	....	....	....	....
Osage orange[1]	....	....	....	....	....	....
Spruce	2,686	6,779	3,294	14,693	3,796	9,016
Locust	....	....	....	....	....	....
All other	1,035	2,874	3,553	18,869	16,885	56,523

[1] Included under "All other."

[2] Included under "All other" for 1908 and 1907.

The total number of wooden poles purchased by pole consumers in the United States in 1909 was 3,738,740, which is the largest total ever reported. The gain over the number reported for 1908 was 489,586, or 15.1 per cent; and over that for 1907, 455,472, or 13.9 per cent. For the poles purchased in 1909 the sum of $7,073,826 was paid, which, although greater by $1,145,002 than the expenditure reported in 1908, was less by $1,007,942 than that in 1907, when the average cost of poles was greater than in other years. In 1909 the leading kinds of wood were cedar, chestnut, oak, and pine, and poles made of these species formed 92.7 per cent of the total number purchased, and represented 95 per cent of the total cost. As in previous years, cedar and chestnut were most important, supplying, respectively, 65.3 per cent and 16.3 per cent of all poles purchased in 1909.

For cedar poles a steady increase is shown, but the number of chestnut poles purchased in 1909, though greater than the number in 1908, was less than that in 1907.

The growing use of oak is notable. In 1907 only 76,450 oak poles were reported, while the number was 160,702 in 1908 and 236,842 in 1909. Other kinds of wood for which steady gains are shown since 1907 are juniper, tamarack, Douglas fir, and osage orange. For cypress, on the other hand, annual decreases were reported. More redwood poles were purchased in 1909 than in 1908, but considerably fewer than in 1907.

The species combined in the table under the head "All other" include hemlock, sassafras, catalpa, mulberry, butternut, ash, elm, cottonwood, and a number of other woods which were used locally in very small quantities.

The three classes of consumers are credited with about the same proportions of the total number of poles purchased in 1909 as in 1908. In 1909, as in previous years, by far the most important of these classes was that comprising the telephone and telegraph companies, which purchased 2,916,005 poles, or 78 per cent of the total number reported. The electric railroad and electric light and power companies bought 627,414 poles, or 16.8 per cent of all poles purchased in 1909, and the steam railroad companies, 195,321 poles, or a little more than 5 per cent.

Since 1908 there has been an increase of 13.8 per cent in the number of poles purchased by the telephone and telegraph companies and an increase of 18 per cent in the number purchased by the electric railroad and electric light and power companies, while the largest gain, 25.7 per cent, is shown for the steam railroads. In comparison with 1907, however, only the purchases of the telephone and telegraph companies show an increase. The large gain in the returns for these companies is due partly to the omission in 1907 of data for many companies using only short poles.

Cedar and chestnut poles were bought extensively by each class of consumers. The telephone and telegraph companies used a wide variety of woods, reporting relatively large numbers of oak poles, nearly all the poles made of osage orange, and most of those made of tamarack. Among the poles purchased by the electric railroad and electric light and power companies pine poles exceeded in number those of any other species except cedar and chestnut. These companies bought comparatively few oak poles, the number being smaller than in the preceding year. Pine poles were also very prominent in the purchases of the steam railroad companies, nearly equaling the number of cedar poles bought by them.

The average cost of all poles purchased was $1.89 in 1909, as compared with $1.82 in 1908 and $2.46 in 1907. The somewhat high cost in 1907 is accounted for in part by the lack of complete statistics for that year as to the purchases of short poles, which, of course, have a low average value.

For the telephone and telegraph companies the average cost of poles purchased in 1909 was $1.40 per pole; for steam railroad companies, $2.83; and for the electric railroad and electric light and power companies, $3.89. The variations in these figures indicate in a general way the differences in the size or grade of the average pole suitable for the purposes of the different classes of companies.

A comparison of figures for average cost per pole has little value unless account is taken of the different sizes and species represented in the purchases. In general, the value of poles advances very rapidly, though not proportionally with increasing length. The few instances in which a group of poles of a given length costs less on the average than a group of shorter poles of the same species may usually be explained either by the presence of a larger proportion of treated poles among the shorter lengths, or by the purchase of many of the longer poles under consideration in a locality where woods have a comparatively low value.

Table 2 gives the number, cost, and average cost per pole of the poles purchased in 1909, by length and by kind of wood.

Of the total number of poles purchased in 1909, nearly one-third were from 20 to 25 feet in length, and more than one-fourth were from 25 to 30 feet in length. Poles under 30 feet in length constituted nearly three-fourths of all poles purchased, while less than one-fortieth of the total number had a length of 45 feet or over.

Cedar was the leading kind of wood in all lengths of poles purchased. Of the oak poles, more than 92 per cent were under 25 feet in length, and by far the largest part were less than 20 feet in length. Osage-orange poles and those of the species classified under the head "All other" were also purchased, principally in the short lengths. Many of the oak and osage-orange poles were used by rural telephone lines or by the so-called "farmers' exchanges."

An increase in average cost since 1908 is shown for each group of poles having a length of 30 feet or over. On the other hand, poles under 20 feet in length cost 56 cents per pole in 1909, as compared with 62 cents in 1908, and poles from 20 to 25 feet in length 82 cents in 1909, as compared with 84 cents in 1908, while for those from 25 to 30 feet in length the average cost was the same in both years.

Of poles having a length of 45 feet or over, Douglas fir poles were purchased for the lowest average cost, while among the shorter lengths the lower-priced woods were tamarack, locust, oak, and osage orange. The high average cost of pine poles was due to the fact that large numbers of these were treated poles. Redwood poles had a uniformly high average cost. These were probably mostly sawed, as over 98 per cent of redwood poles were so reported in 1906.

TABLE 2.—*Poles purchased—Number, cost, and average cost, by length and by kind of wood: 1909.*

KIND OF WOOD.	ALL LENGTHS.			UNDER 20 FEET.		
	Number.	Cost at point of purchase.	Average cost per pole.	Number.	Cost at point of purchase.	Average cost per pole.
Total	3,738,740	$7,073,826	$1.89	571,742	$322,018	$0.56
Cedar	2,439,825	4,679,928	1.92	306,264	191,279	0.62
Chestnut	608,066	1,382,599	2.27	24,008	11,563	0.48
Oak	236,842	136,961	0.58	138,544	48,230	0.35
Pine	179,586	520,052	2.90	47,288	44,184	0.93
Cypress	77,677	117,496	1.51	7,004	4,403	0.63
Juniper	43,581	79,389	1.82	1,743	1,078	0.62
Tamarack	29,889	18,282	0.61	5,098	1,974	0.39
Douglas fir	24,877	35,266	1.42	3,384	1,939	0.57
Redwood	23,145	49,354	2.13	3,606	3,895	1.08
Osage orange	21,491	8,712	0.41	17,402	6,479	0.37
Spruce	11,423	17,857	1.56	606	641	1.06
Locust	10,463	9,164	0.88	3,471	1,298	0.37
All other	31,875	18,766	0.59	13,324	5,055	0.38

KIND OF WOOD.	20 FEET AND OVER BUT UNDER 25 FEET.			25 FEET AND OVER BUT UNDER 30 FEET.		
	Number.	Cost at point of purchase.	Average cost per pole.	Number.	Cost at point of purchase.	Average cost per pole.
Total	1,208,029	$986,959	$0.82	990,179	$1,503,378	$1.52
Cedar	852,265	700,452	0.82	701,316	1,050,865	1.50
Chestnut	125,848	97,655	0.78	187,060	260,245	1.39
Oak	79,877	40,709	0.51	10,897	18,404	1.69
Pine	52,271	74,719	1.43	32,049	104,045	3.25
Cypress	22,132	14,305	0.65	17,975	17,928	1.00
Juniper	12,775	10,601	0.83	14,120	18,519	1.31
Tamarack	16,492	6,458	0.39	5,880	3,163	0.54
Douglas fir	10,366	7,346	0.71	4,321	4,391	1.02
Redwood	12,454	18,311	1.47	4,009	12,346	3.08
Osage orange	3,041	1,593	0.52	871	496	0.57
Spruce	3,740	3,432	0.92	4,623	6,316	1.37
Locust	3,948	3,940	1.00	2,264	2,820	1.25
All other	12,820	7,438	0.58	4,794	3,840	0.80

KIND OF WOOD.	30 FEET AND OVER BUT UNDER 35 FEET.			35 FEET AND OVER BUT UNDER 40 FEET.		
	Number.	Cost at point of purchase.	Average cost per pole.	Number.	Cost at point of purchase.	Average cost per pole.
Total	470,344	$1,424,623	$3.03	300,685	$1,394,668	$4.64
Cedar	281,963	896,375	3.18	178,812	919,230	5.14
Chestnut	127,028	334,928	2.64	93,718	351,236	3.75
Oak	4,579	14,206	3.10	1,679	6,041	3.60
Pine	23,959	117,325	4.90	8,917	56,577	6.34
Cypress	15,975	27,949	1.75	8,420	23,417	2.78
Juniper	7,300	14,537	1.99	4,374	17,399	3.98
Tamarack	1,336	1,812	1.36	469	907	1.93
Douglas fir	3,503	6,269	1.79	2,475	10,594	4.28
Redwood	1,398	4,748	3.40	1,425	8,046	5.65
Osage orange	177	144	0.81	....	....	....
Spruce	1,698	4,063	2.40	252	721	2.86
Locust	767	1,037	1.35	....	....	....
All other	661	1,230	1.86	144	500	3.47

TABLE 2.—*Poles purchased—Number, cost, and average cost, by length and by kind of wood: 1909*—Continued.

KIND OF WOOD.	40 FEET AND OVER BUT UNDER 45 FEET.			45 FEET AND OVER BUT UNDER 50 FEET.		
	Number.	Cost at point of purchase.	Average cost per pole.	Number.	Cost at point of purchase.	Average cost per pole.
Total	115,367	$729,730	$6.33	46,462	$343,167	$7.38
Cedar	70,615	473,782	6.71	26,354	212,372	8.06
Chestnut	29,129	153,554	5.27	13,506	92,706	6.86
Oak	589	3,032	5.15	206	1,351	6.56
Pine	9,006	74,173	8.24	2,758	16,729	6.07
Cypress	2,731	9,178	3.36	2,821	15,685	5.56
Juniper	1,975	9,141	4.63	479	2,537	5.28
Tamarack	273	875	3.21	93	671	7.22
Douglas fir	574	3,396	5.92	165	794	4.81
Redwood	191	1,360	7.12			
Osage orange[1]						
Spruce	277	1,208	4.36			
Locust	7	31	4.43			
All other				80	322	4.03

KIND OF WOOD.	50 FEET AND OVER BUT UNDER 55 FEET.			55 FEET AND OVER BUT UNDER 60 FEET.			60 FEET AND OVER.		
	Number.	Cost at point of purchase.	Average cost per pole.	Number.	Cost at point of purchase.	Average cost per pole.	Number.	Cost at point of purchase.	Average cost per pole.
Total	21,529	$199,440	$9.26	8,068	$87,175	$10.81	6,335	$82,668	$13.05
Cedar	13,980	135,111	9.66	5,131	56,437	11.00	3,125	44,025	14.09
Chestnut	4,671	40,889	8.75	1,922	21,390	11.12	1,176	18,433	15.67
Oak	210	1,789	8.52	237	2,816	11.88	24	383	15.96
Pine	1,466	13,357	9.11	502	4,613	9.19	1,370	14,330	10.46
Cypress	398	2,769	6.96	94	620	6.60	127	1,242	9.78
Juniper	712	4,678	6.57	48	358	7.46	55	541	9.84
Tamarack				48	422	8.79	200	2,000	10.00
Douglas fir				70	406	5.80	19	131	6.89
Redwood	62	648	10.45						
Osage orange[1]									
Spruce							227	1,476	6.50
Locust	6	38	6.33						
All other	24	161	6.71	16	113	7.06	12	107	8.92

[1] Included in "All other."

PRESERVATION.

An important factor in determining the value of a pole is its ability to resist decay, especially when in contact with the soil. Although durable woods are generally preferred as pole timbers, there is an increasing tendency to purchase species, especially the pines, which are naturally less durable, and to render them less liable to decay by means of a preservative treatment.

Poles may be treated by applying the preservative with a brush, by dipping them in a tank containing the preserving fluid, by standing them in an open tank and securing an absorption of the preservative by periods of heating and cooling, or by the application of pressure to a closed cylinder containing the poles and the preservative.

There is a wide variation in the efficiency of the various preservatives used and of the methods of their application. The resulting increased service secured varies accordingly from a few years to more than twenty.

For some species and for poles intended for use in regions where they will be particularly liable to decay, as in some of the Southern states, a thorough impregnation of the entire pole with the preservative is often most economical.

By far the greater number of the poles reported as treated were made of those timbers which have a naturally long life and were given a light treatment, adding comparatively few years to the life of the pole. It follows, therefore, that the advance in pole preservation as measured by added length of service has been much less in the United States than would be inferred from the number of treated poles reported.

With regard to the number of poles which were treated by the open-tank process no statistics are available; but this practice is known to be increasing.

Reports to the Forest Service from 62 commercial and private treating plants show that in 1909 about 1,123,000 linear feet of pole timber, equivalent to 44,920 poles 25 feet in length, were creosoted under pressure with from 8 to 20 pounds of oil per cubic foot of timber, and that, in addition, several hundred thousand linear feet were given a treatment with creosote oil and a zinc chloride solution combined. The plants reporting poles treated under pressure were all in the Southern states and the wood used was chiefly southern yellow pine. No reports were received from three southern plants which also treated poles by this method.

Among the preservatives reported by the companies which purchased poles were creosote, coal tar, crude oil, and various patented preservatives.

Table 3 distributes the treated poles reported in 1909, 1908, and 1907 among the different classes of consumers.

Of the poles reported in 1909, 576,631, or 15.4 per cent, received treatment before or after purchase. This represents an increase of about 232,000, or 67.4 per cent, over the number reported as treated in 1908, and an increase of 180,432, or 45.5 per cent, over the corresponding number in 1907. In 1908 treated poles formed 10.6 per cent of the total number of poles reported as purchased, and in 1907, 12.1 per cent.

Each class of consumers reported more treated poles in 1909 than in 1908, the percentage of increase being greatest in the case of electric railroad and electric light and power companies.

TABLE 3.—*Poles purchased already treated or treated after purchase, by class of purchaser: 1909, 1908, and 1907.*

CLASS OF PURCHASER.	1909		
	Total.	Treated—	
		Before purchase.	After purchase.
All classes	576,631	126,711	449,920
Telephone and telegraph companies	364,413	78,661	285,752
Electric railroad and electric light and power companies	151,548	39,873	111,675
Steam railroad companies	60,670	8,177	52,493

CLASS OF PURCHASER.	1908			1907		
	Total.	Treated—		Total.	Treated—	
		Before purchase.	After purchase.		Before purchase.	After purchase.
All classes	344,388	101,998	242,390	396,199	106,781	289,418
Telephone and telegraph companies	218,317	68,363	149,954	230,648	47,272	183,376
Electric railroad and electric light and power companies	78,083	23,034	55,049	84,222	21,640	62,582
Steam railroad companies	47,988	10,601	37,387	81,329	37,869	43,460

Telephone and telegraph companies reported that treated poles constituted 12.5 per cent of their purchases in 1909, as compared with 8.5 per cent in 1908 and 10 per cent in 1907. Although these companies use the greatest number of treated poles of any of the several classes of consumers, the proportion which these poles form of their total purchases is the smallest reported for any class.

Of the poles purchased by electric railroad and electric light and power companies in 1909, 24.2 per cent were reported as treated, while in 1908 and 1907 treated poles formed respectively 14.7 per cent and 12.4 per cent of their purchases. These companies use poles of high average grade and value.

The steam railroad companies reported that 31.1 per cent of all poles purchased by them in 1909 were treated, which was the highest proportion reported by any class of consumers. In 1908 the percentage of treated poles for this class of consumers was 30.9, and in 1907 it was 27.6.

Treated cross arms, brackets, and pins are used by some companies, but to what extent is not known. According to reports to the Forest Service from 62 treating plants, 67,000 cross arms were treated by them in 1909 with from 10 to 14 pounds of creosote oil per cubic foot of wood. The majority of cross arms are painted before use.

CROSS ARMS, BRACKETS, AND INSULATOR PINS.

Table 4 shows the number, cost, and average cost of cross arms purchased, according to kind of wood and class of purchaser.

TABLE 4.—*Cross arms purchased—Number, cost, and average cost, by kind of wood and by class of purchaser: 1909.*

KIND OF WOOD.	ALL COMPANIES.			TELEPHONE AND TELEGRAPH COMPANIES.			ELECTRIC RAILROAD AND ELECTRIC LIGHT AND POWER COMPANIES.			STEAM RAILROAD COMPANIES.		
	Number.	Cost.	Average cost per cross arm.	Number.	Cost.	Average cost per cross arm.	Number.	Cost.	Average cost per cross arm.	Number.	Cost.	Average cost per cross arm.
Total	3,508,695	$1,284,952	$0.37	2,064,451	$790,284	$0.38	1,231,177	$432,244	$0.35	213,067	$62,424	$0.29
Douglas fir	1,720,247	657,915	0.38	1,218,054	480,421	0.39	422,198	155,960	0.37	79,995	21,534	0.27
Pine	1,411,438	515,848	0.37	640,725	250,782	0.39	689,664	238,139	0.35	81,049	26,927	0.33
Oak	118,875	28,046	0.24	61,756	14,124	0.23	26,040	7,565	0.29	31,079	6,357	0.20
Cypress	77,957	26,098	0.33	63,242	20,757	0.33	6,274	1,633	0.26	8,441	3,708	0.44
Spruce	74,463	24,569	0.33	10,703	3,004	0.28	62,325	21,275	0.34	1,435	290	0.20
Juniper	27,088	9,371	0.35	25,888	9,123	0.35	1,200	248	0.21	....	....	....
Cedar	26,629	7,794	0.29	10,754	3,139	0.29	5,710	1,422	0.25	10,165	3,233	0.32
Chestnut	18,642	6,302	0.34	12,822	3,942	0.31	5,820	2,360	0.41	....	....	....
Locust	10,836	3,033	0.28	6,486	1,675	0.26	4,047	1,193	0.29	303	165	0.54
All other	22,520	5,976	0.27	14,021	3,317	0.24	7,899	2,449	0.31	600	210	0.35

The number of cross arms purchased in 1909 by the companies which bought poles was 3,508,695, and their total cost was $1,284,952. Douglas fir and pine constituted the material of 89.3 per cent of the cross arms purchased. Oak, cypress, and spruce arms were bought in large quantities and several other kinds of wood were also represented.

Of the cross arms bought by the telephone and telegraph companies, nearly 60 per cent were of Douglas fir, and slightly more than 30 per cent were of pine. Pine supplied 56 per cent of the cross arms purchased by the electric railroad and electric light and power companies, while cross arms made from Douglas fir and spruce formed 34.3 per cent and 5.1 per cent, respectively. In the purchases of the steam railroads the proportions of pine and Douglas fir cross arms were respectively 38 per cent and 37.5 per cent, while oak and cedar cross arms were next in importance.

The average cost per cross arm for all poles purchased in 1909 was 37 cents. Of the three classes of consumers, steam railroads reported the lowest average cost per cross arm—29 cents. The telephone and telegraph companies paid an average of 38 cents, and the electric railroad and electric light and power companies paid an average of 35 cents. The highest average price paid by any class of purchasers for any species was 54 cents for locust arms purchased by the steam railroad companies, and the lowest average price was 20 cents for oak and spruce arms bought by the same companies. The figures for average cost per cross arm of different woods are not directly comparable, since the variation in size was not shown.

Table 5 shows the number, cost, and average cost of the brackets purchased in 1909.

TABLE 5.—*Brackets purchased—Number, cost, and average cost, by kind of wood and by class of purchaser: 1909.*

KIND OF WOOD.	ALL COMPANIES.			TELEPHONE AND TELEGRAPH COMPANIES.		
	Number.	Cost.	Average cost per bracket.	Number.	Cost.	Average cost per bracket.
Total	6,167,795	$94,721	$0.015	5,145,453	$72,679	$0.014
Oak	5,873,320	88,515	0.015	4,987,145	69,518	0.014
Locust	112,130	2,087	0.019	52,461	928	0.018
Pine	63,292	1,753	0.028	31,778	890	0.028
Douglas fir	53,100	995	0.019	26,161	552	0.021
All other	65,953	1,371	0.021	47,908	791	0.017

KIND OF WOOD.	ELECTRIC RAILROAD AND ELECTRIC LIGHT AND POWER COMPANIES.			STEAM RAILROAD COMPANIES.		
	Number.	Cost.	Average cost per bracket.	Number.	Cost.	Average cost per bracket.
Total	886,673	$19,866	$0.022	135,669	$2,176	$0.016
Oak	779,430	17,345	0.022	106,745	1,652	0.015
Locust	59,669	1,159	0.019	....	....	....
Pine	25,844	670	0.026	5,670	193	0.034
Douglas fir	4,910	128	0.026	22,029	315	0.014
All other	16,820	564	0.034	1,225	16	0.013

The total number of brackets reported in 1909 was 6,167,795 and the amount paid for them was $94,721. Oak was the principal kind of wood used, furnishing 95.2 per cent of the total number of brackets reported and contributing a high proportion of the total in the case of each class of consumers. Locust and pine brackets ranked next in importance among the purchases of both the telegraph and telephone companies and the electric railroad and electric light and power companies. The steam railroads did not purchase any locust brackets, but reported more Douglas fir brackets than any other kind except oak.

The average cost per 100 brackets for all kinds of brackets purchased was $1.50. The electric railroad and electric light and power companies paid the highest average price reported by the several classes of purchasers, $2.20 per 100 brackets, and the telephone and telegraph companies the lowest price, $1.40 per 100 brackets; while the average cost per 100 brackets for the steam railroad companies was $1.60. Pine brackets were the highest-priced brackets among the total purchases and among the purchases of the telephone and telegraph companies, the average cost in each case being $2.80 per 100 brackets. The lowest average cost per 100 brackets reported for any variety by the telephone and telegraph companies was for oak brackets, $1.40, and the lowest average reported by the electric railroad and electric light and power companies was for locust brackets, $1.90. In the case of the steam railroads the lowest average price paid for any of the varieties shown separately was $1.40 per 100 brackets for brackets made from Douglas fir.

Table 6 shows the number, cost, and average cost of insulator pins purchased in 1909.

Of the 18,463,041 insulator pins reported, 70.8 per cent were locust, 12 per cent oak, and 11.9 per cent elm, these three kinds of wood furnishing nearly 95 per cent of the total number purchased in 1909. Locust was used to a far greater extent than any other kind of wood by each class of companies except the steam railroads, which purchased oak pins to a greater extent than any other kind.

Elm pins were next in importance to those of locust in the reports of the telephone and telegraph companies, but the proportion of elm pins purchased by the electric railroad and electric light and power companies was small, and no elm pins were reported by the steam railroads.

Among the species included under the head "All other" are pine, birch, cedar, Douglas fir, eucalyptus, and chestnut.

TABLE 6.—*Insulator pins purchased—Number, cost, and average cost, by kind of wood and by class of purchaser: 1909.*

KIND OF WOOD.	ALL COMPANIES.			TELEPHONE AND TELEGRAPH COMPANIES.		
	Number.	Cost.	Average cost per pin.	Number.	Cost.	Average cost per pin.
Total	18,463,041	$241,096	$0.013	13,900,077	$161,760	$0.012
Locust	13,062,924	170,864	0.013	9,666,667	111,972	0.012
Oak	2,221,776	32,170	0.014	1,406,965	18,041	0.013
Elm	2,193,038	24,168	0.011	2,161,413	23,668	0.011
Osage orange	551,842	6,788	0.012	424,111	4,816	0.011
All other	433,461	7,106	0.016	240,921	3,263	0.014

KIND OF WOOD.	ELECTRIC RAILROAD AND ELECTRIC LIGHT AND POWER COMPANIES.			STEAM RAILROAD COMPANIES.		
	Number.	Cost.	Average cost per pin.	Number.	Cost.	Average cost per pin.
Total	4,177,087	$73,761	$0.018	385,877	$5,575	$0.014
Locust	3,231,090	56,416	0.017	165,167	2,476	0.015
Oak	614,001	11,314	0.018	200,810	2,815	0.014
Elm	31,625	500	0.016			
Osage orange	115,651	1,830	0.016	12,080	142	0.012
All other	184,720	3,701	0.020	7,820	142	0.018

The highest average cost per 100 pins shown for any class of purchasers was reported by the electric railroad and electric light and power companies, amounting to $1.80, and the lowest average cost, $1.20 per 100 pins, was reported by the telephone and telegraph companies. The average price paid by the steam roads was $1.40 per 100 pins. Pins of the species grouped under the head "All other" had the highest average cost, while oak and locust pins were the highest priced of the kinds shown separately.

WOOD DISTILLATION.

During the calendar year 1909 there were consumed in the United States in the processes of wood distillation 1,265,157 cords of wood by 147 plants, as against 977,844 cords by 131 plants in 1908 and 1,282,120 cords in 1907 by the same number of plants. The quantity used in 1909 was 287,313 cords, or 29.4 per cent, more than in 1908, and 16,963 cords, or 1.3 per cent, less than in 1907. The industry, though of relatively small importance when compared with lumber production or even with pulp-wood consumption, has shown a similar recovery from the poor business conditions prevailing in 1908. This is noteworthy in hardwood distillation, where it is due about half to the increase in the quantity and the average value per gallon of wood alcohol, and about half to an increased production of charcoal and gray acetate.

The wood-distillation industry is concerned with the manufacture of such products as result from the heating of wood so as to produce volatile distillates and solid residue. Two distinct processes of manufacture, known, respectively, as the destructive process and the steam process, are in general use. In the former the wood is heated to such a temperature that the fiber is destroyed and new products are formed. In the latter the volatile substances are removed from the wood by treatment with steam, which does not destroy the fiber. Each process is modified to some extent for special uses.

The wood-distillation industry is naturally divided into two branches, "hardwood distillation" and "softwood distillation," and the statistics are presented separately for each class. With few exceptions, the establishments engaged in the former are confined to the Northern and Central states, chiefly Michigan, New York, and Pennsylvania, while the latter branch of the industry is located principally in the South Atlantic and Gulf states, especially Alabama, Florida, and Georgia.

HARDWOOD DISTILLATION.

Beech, birch, and maple continue to be the principal woods consumed in hardwood distillation, and in 1909 constituted 94 per cent of the raw material used Small quantities of oak, hickory, chestnut and elm, and ash were also consumed. In hardwood distillation the destructive process is generally employed, and the principal products reported are charcoal, crude wood alcohol, and gray acetate.

Table 1 shows for 1907, 1908, and 1909 a comparative summary of the principal statistics of the hardwood distillation branch of the industry.

TABLE 1.—*Wood distillation—hardwoods—Number of establishments, quantity and cost of material used, and quantity and value of products, with per cent of increase: 1909, 1908, and 1907.*

	1909	Per cent of increase, 1908 to 1909.	1908	Per cent of increase, 1907 to 1908.	1907
Number of establishments	116	14.9	101	1.0	100
MATERIAL—(wood, chiefly beech, birch, and maple):					
Quantity, cords	1,149,847	30.9	878,632	[1] 28.0	1,219,771
Cost	$3,818,282	40.9	$2,710,745	[1] 29.1	$3,824,669
PRODUCTS, total value	$7,641,690	41.3	$5,408,265	[1] 29.4	$7,661,379
Charcoal—					
Quantity, bushels	53,075,102	42.3	37,286,520	[1] 26.6	50,772,234
Value	$3,299,002	24.7	$2,644,923	[1] 31.1	$3,838,392
Crude alcohol—					
Quantity, gallons	8,468,083	34.7	6,285,678	[1] 18.8	7,741,645
Value	$2,082,253	92.0	$1,084,223	[1] 6.0	$1,153,307
Gray acetate—					
Quantity, pounds	148,769,479	40.2	106,098,846	[1] 20.5	133,374,941
Value	$2,202,847	34.6	$1,636,825	[1] 36.2	$2,565,938
Brown acetate—					
Quantity, pounds	2,156,907	36.0	1,586,441	[1] 80.5	8,152,848
Value	$22,203	65.0	$13,457	[1] 85.8	$94,446
Iron acetate—					
Quantity, gallons	302,624	15.1	262,989		
Value	$27,779	11.0	$25,024		
Oils—					
Quantity, gallons	37,995	[1] 34.3	57,829	[1] 84.9	382,959
Value	$3,082	[1] 19.2	$3,813	[1] 59.0	$9,296
All other—					
Value	$4,524				

[1] Decrease.

The number of establishments in 1909 was 116, an increase of 15 over 1908 and of 16 over 1907. The total consumption of hardwood in 1909 was 1,149,847 cords, an increase of 271,215 cords, or 30.9 per cent, over the quantity used in 1908, and 69,924 cords, or 5.7 per cent, less than that used in 1907. The average cost per cord of the hardwood consumed in 1909 was $3.32; in 1908, $3.09; and in 1907, $3.14. In 1909 the total value of the products was only $19,689 less than in 1907, while it was $2,233,425 more than in 1908. To this great recovery in value of products between 1908 and 1909, crude alcohol contributed nearly $1,000,000, charcoal $654,079, and gray acetate $566,022.

The production of charcoal in 1909 was 53,075,102 bushels, which was an increase of 15,788,582 bushels over the production of 1908 and 2,302,868 bushels over that of 1907.

In 1909, 2,182,405 gallons more of crude alcohol were produced than in 1908 and 726,438 gallons more than in 1907. Marked changes in the value of crude alcohol have occurred during the past four years. The value reported for the product of 1906 was 34 cents per gallon. The denatured alcohol bill, passed in June, 1906, and effective January 1, 1907, caused the price of crude wood alcohol manufactured in 1907 to fall to $0.149 per gallon. Since 1907 the value has risen again, reaching $0.172 in 1908 and $0.246 in 1909.

In 1909 the production of gray acetate was 148,769,479 pounds. This was 40.2 per cent more than in 1908 and 11.5 per cent more than in 1907. The average value has not changed greatly, being in 1909 only $0.004 less per pound than in 1907.

Brown acetate manufactured in 1909 shows an increase of 570,466 pounds over the quantity reported for 1908 and iron acetate a gain of 39,635 gallons during the same period. On the other hand, the quantity of oils reported in 1909, 37,995 gallons, was 19,834 gallons less than in 1908 and 344,964 gallons less than in 1907.

The products to the value of $4,524, combined in the table under the caption "All other," consist principally of tar and pyroligneous acid.

Table 2 shows the number of establishments and the quantity and cost of the wood used for hardwood distillation, by states, in 1909.

TABLE 2.—*Wood distillation—hardwoods—Number of establishments and quantity and cost of wood used, with per cent distribution, by states: 1909.*

STATE.	Number of establishments.	WOOD CONSUMED IN DISTILLATION OF HARDWOODS.				
		Quantity.		Cost.		
		Cords.	Per cent distribution.	Amount.	Per cent distribution.	Average per cord.
United States	116	1,149,847	100.0	$3,818,282	100.0	$3.32
Michigan	14	457,362	39.8	1,384,107	36.2	3.03
Pennsylvania	56	368,126	32.0	1,353,464	35.4	3.68
New York	28	139,041	12.1	504,002	13.2	3.62
All other states [1]	[1] 18	185,318	16.1	576,709	15.1	3.11

[1] Includes establishments distributed as follows: Alabama, 1; Connecticut, 1; Maryland, 1; Massachusetts, 2; Missouri, 2; New Jersey, 3; Ohio, 3; Tennessee, 1; Vermont, 1; West Virginia, 1; and Wisconsin, 2.

Michigan used 457,362 cords, or 39.8 per cent of the total wood consumed in hardwood distillation in 1909. This quantity, reported by 14 establishments, was 146,452 cords more than that consumed by the Michigan establishments in 1908. The consumption per establishment, moreover, was greater by over 4,400 cords in 1909 than in 1908, and the average cost per cord was 55 cents higher.

Pennsylvania, though reporting nearly one-half of the total number of establishments engaged in hardwood distillation in 1909, ranked second as to quantity of raw material consumed. The consumption in this state, 368,126 cords, or 32 per cent of the total, represents an increase of 65,423 cords, or 21.6 per cent, over 1908, and the average cost per cord was 15 cents higher. The consumption of hardwood per establishment in Pennsylvania was 6,574 cords in 1909, while in 1908 it was 5,711 cords.

In 1909 New York, which reported 28 establishments, only one-half as many as Pennsylvania, consumed 139,041 cords of hardwood, or

12.1 per cent of the total quantity used. This was more than twice the quantity used in the state by the 24 establishments reporting in 1908. The average cost per cord in 1909 was $3.62, or 1 cent less than in 1908, and the consumption per establishment was 4,966 cords, whereas in 1908 it was 2,836 cords.

The territory included in "All other states" for 1909 is somewhat different from that for 1908. This is due to the addition of reports from establishments engaged in hardwood distillation in Alabama, Connecticut, Maryland, Tennessee, Vermont, and West Virginia. Nevertheless, the total quantity of wood used by the 18 establishments in this group of 11 states in 1909 was 11,630 cords less than the quantity used by the 13 establishments in the five states composing the group in 1908.

The quantity and value of the products of hardwood distillation in 1909 are shown, by states, in Table 3.

TABLE 3.—*Wood distillation—hardwoods—Quantity and value of products, by states: 1909.*

PRODUCT.	United States.	Michigan.	New York.	Pennsylvania.	All other states.[1]
All products, total value	$7,641,690	$2,737,021	$952,448	$2,939,960	$1,012,261
Charcoal:					
Quantity, bushels	53,075,102	21,575,556	5,290,506	16,803,172	9,405,868
Value	$3,299,002	$1,405,718	$275,971	$912,176	$705,137
Average value per bushel	$0.062	$0.065	$0.052	$0.054	$0.075
Crude alcohol:					
Quantity, gallons	8,468,083	2,980,579	1,225,419	3,664,538	597,547
Value	$2,082,253	$780,240	$293,866	$856,539	$151,608
Average value per gallon	$0.246	$0.262	$0.240	$0.234	$0.254
Gray acetate:					
Quantity, pounds	148,769,479	38,185,993	24,148,205	75,272,713	11,162,568
Value	$2,202,847	$534,572	$375,256	$1,165,943	$127,076
Average value per pound	$0.015	$0.014	$0.016	$0.015	$0.011
Brown acetate:					
Quantity, pounds	2,156,907	1,523,307	633,600	....	....
Value	$22,203	$15,233	$6,970	....	....
Average value per pound	$0.010	$0.010	$0.011	....	....
Iron acetate:					
Quantity, gallons	302,624	....	....	....	302,624
Value	$27,779	....	....	....	$27,779
Average value per gallon	$0.092	....	....	....	$0.092
Oils:					
Quantity, gallons	37,995	....	5,500	32,495	....
Value	$3,082	....	$385	$2,697	....
Average value per gallon	$0.081	....	$0.070	$0.083	....
All other:					
Value	$4,524	$1,258	....	$2,605	$661

[1] Includes Alabama, Connecticut, Maryland, Massachusetts, Missouri, New Jersey, Ohio, Tennessee, Vermont, West Virginia, and Wisconsin.

In value of products for 1909, Pennsylvania led with $2,939,960, or 38.5 per cent of the total for the United States. Michigan followed closely with $2,737,021, or 35.8 per cent, and New York ranked third with $952,448, or 12.5 per cent.

In quantity of charcoal produced in 1909 Michigan ranked first and Pennsylvania second. Together these two states produced 38,378,728 bushels, or 72.3 per cent of the total quantity, which amounted to about 1,100,000 bushels more than the total production of the United States in 1908. The value per bushel in 1909 ranged from $0.052 in New York to $0.075 for the group of states included under the head "All other states," and the average for the country as a whole was $0.009 less than in 1908.

Pennsylvania led in the production of crude alcohol in 1909 with 43.3 per cent of the total quantity, Michigan followed with 35.2 per cent, and New York came third with 14.5 per cent. The production of crude alcohol by these three states in 1909 was 7,870,536 gallons, and was greater than the output of these states in 1908 by 2,802,754 gallons, or 55.3 per cent. The average value per gallon in 1909 ranged from $0.234 in Pennsylvania to $0.262 in Michigan.

In 1909, 50.6 per cent of the gray acetate was reported from Pennsylvania and a little more than one-half as much from Michigan. The average value per pound varied little, ranging from $0.011 in the group designated "All other states " to $0.016 in New York.

The largest quantity of brown acetate, amounting to 70.6 per cent of the total output, was reported from Michigan. The only other state reporting this product was New York. In the table iron acetate is shown only for "All other states." It was reported chiefly from New Jersey and Massachusetts.

SOFTWOOD DISTILLATION.

Thirty-one establishments were reported as engaged in softwood distillation in 1909. Though the distribution according to states has changed greatly in the past three years, the total number is the same as in 1907 and only one more than in 1908.

Softwood distillation as an industry is still to some extent in an experimental stage. A number of the processes which have been tried have not proved uniformly satisfactory, and consequently establishments have been abandoned or removed to more suitable localities. For this reason little change has occurred in the number of establishments, though the quantity of wood consumed and the value of the products have increased somewhat from year to year. The consumption of woods other than longleaf pine, which has been the principal wood used since the foundation of the industry, increased thirteenfold between 1907 and 1909, and whereas in the earlier year longleaf pine formed 98.1 per cent of the raw material, in the latter it formed only 86.5 per cent.

Table 4 shows the number of establishments, the quantity and cost of the raw material used, and the quantity and value of the products of softwood distillation in 1907, 1908, and 1909.

TABLE 4.—*Wood distillation—softwoods—Number of establishments, quantity and cost of material used, and quantity and value of products, with per cent of increase: 1909, 1908, and 1907.*

	1909	Per cent of increase, 1908 to 1909.	1908	Per cent of increase, 1907 to 1908.	1907
Number of establishments	31	3.3	30	[1]3.2	31
MATERIAL, total:					
Quantity, cords	115,310	16.2	99,212	59.1	62,349
Cost	$241,726	16.7	$207,202	[1]1.7	$210,844
Longleaf pine—					
Quantity, cords	99,686	9.6	90,991	48.8	61,149
Cost	$233,742	15.9	$201,696	[1]4.2	$210,604
All other, including mill waste—					
Quantity, cords	15,624	90.0	8,221	585.1	1,200
Cost	$7,984	45.0	$5,506	2,194.2	$240
PRODUCTS, total value	$686,794	39.8	$491,161	[1]8.2	$534,802
Turpentine—					
Quantity, gallons	682,702	35.0	505,800	[1]22.7	654,711
Value	$243,491	46.4	$166,343	[1]45.4	$304,860
Charcoal—					
Quantity, bushels	2,403,401	20.4	1,995,728	72.3	1,158,364
Value	$210,017	12.5	$186,616	82.2	$102,411
Oil—					
Quantity, gallons	323,226	6.0	304,979	[1]22.2	391,916
Value	$70,080	25.0	$56,043	[1]19.2	$69,399
Tar—					
Quantity, gallons	1,364,984	41.2	966,675	27.1	760,836
Value	$104,671	28.7	$81,349	39.9	$58,132
Pyroligneous acid—					
Quantity gallons	4,850	[1]40.1	8,100	....	....
Value	$218	[1]73.1	$810	....	....
All other—					
Value	$58,317	....	....	....	....

[1] Decrease.

In 1909 there were used for softwood distillation 99,686 cords of longleaf pine. This was 8,695 cords more than the quantity consumed for this purpose in 1908 and 38,537 cords more than that in 1907. In 1909, 15,624 cords of other woods were used, principally in the form of dry body wood. These consisted chiefly of shortleaf pine, Norway pine, and Douglas fir, together with mill waste and stumps of various kinds, and show an increase over 1908 of 7,403 cords, or 90 per cent.

The total cost of the raw material used in 1909 was $241,726, which was an increase of 16.7 per cent over the value of the material used in 1908 and of 14.6 per cent over the value of that used in 1907. The total value of the products of softwood distillation in 1909, $686,794, represents an increase of 39.8 per cent over the value of the products of 1908 and 28.4 per cent over 1907.

The principal products of softwood distillation are turpentine and charcoal. In 1909 the turpentine output, valued at $243,491, ranked first and supplied 35.5 per cent of the total value of the products. Charcoal followed, being valued at $210,017, and furnishing 30.6 per cent of the total value of products. These statistics include the production of charcoal in large plants manufacturing this product exclusively, though doubtless numerous small plants producing this commodity chiefly for local consumption are not covered. Tar furnished 15.2 per cent of the total value of products; oil, 10.2

per cent; and the products included under the head "All other," 8.5 per cent. The last group includes principally wood creosote, rosin, crude products not specifically enumerated, and a number of market articles, produced by refining processes. These products were not reported in 1907 or 1908, since the tendency of such a comparatively new industry is not to enumerate minor by-products.

All four leading products showed substantial increases in quantity in 1909 over 1908, and with the exception of oil, showed increases over 1907. Charcoal showed an increase of 20.4 per cent over 1908 and of 107.5 per cent over 1907; turpentine, an increase of 35 per cent over 1908 and of 4.3 per cent over 1907; tar, an increase of 41.2 per cent over 1908 and of 79.4 per cent over 1907; and oil, an increase of 6 per cent over 1908 but a decrease of 17.5 per cent from 1907.

Pyroligneous acid, which was reported only in 1908 and 1909, showed a decrease in quantity in the latter year of 3,250 gallons, or 40.1 per cent.

Table 5 shows the number of establishments and the quantity and cost of the wood used in softwood distillation in 1909, by states.

TABLE 5.—*Wood distillation—softwoods—Number of establishments and quantity and cost of wood used, with per cent distribution, by states: 1909.*

STATE.	Number of establishments.	WOOD CONSUMED IN DISTILLATION OF SOFTWOODS.				
		Quantity.		Cost.		
		Cords.	Per cent distribution.	Amount.	Per cent distribution.	Average per cord.
United States	31	115,310	100.0	$241,726	100.0	$2.10
Alabama	3	46,478	40.3	69,859	28.9	1.50
Florida	7	25,318	22.0	38,979	16.1	1.54
Georgia	4	21,400	18.6	61,650	25.5	2.88
North Carolina	6	6,059	5.3	18,097	7.5	2.99
South Carolina	3	5,721	5.0	18,151	7.5	3.17
All other states [1]	[1] 8	10,334	9.0	34,990	14.5	3.39

[1] Includes establishments distributed as follows: Delaware, 1; Louisiana, 2; Michigan, 3; Oregon, 1; and Texas, 1.

While the total number of establishments in 1909 was practically the same as in 1908, the number had changed slightly in several of the states. The greatest decrease was in Georgia, which had seven plants in 1908 and four in 1909. On the other hand, Michigan, from which no establishments were reported as using softwood in 1908, showed three plants in 1909. Florida led in the number of establishments in 1909, North Carolina ranked second, and Georgia third.

It is interesting to notice that the average cost per cord was lowest in the state consuming the largest quantity of wood, and throughout the list of states the average cost per cord increased as the quantity of wood consumed decreased. Alabama consumed 40.3 per cent of the total quantity of wood used; Florida, 22 per cent; Georgia, 18.6 per cent; North Carolina, 5.3 per cent; and South Carolina, 5 per cent.

The eight establishments in "All other states" reported a consumption of 10,334 cords, or 9 per cent of the total, at an average cost of $3.39 per cord.

The average cost per cord for all the wood used in softwood distillation was 14 cents less in 1909 than in 1908, the most marked change taking place in Florida, where the average cost per cord fell from $2.30 in 1908 to $1.54 in 1909.

The quantity and value of the products of softwood distillation in 1909, by states, are shown in Table 6.

TABLE 6.—*Wood distillation—softwoods—Quantity and value of products, by states: 1909.*

PRODUCT.	United States.	Alabama.	Florida.	Georgia.	North Carolina.	South Carolina.	All other states.[1]
All products, total value.	$686,794	$162,656	$121,950	$154,375	$91,936	$66,553	$89,324
Turpentine:							
Quantity, gallons	682,702	28,520	176,502	262,000	64,900	68,513	82,267
Value	$243,491	$8,582	$60,262	$95,951	$26,719	$23,255	$28,722
Average value per gallon	$0.357	$0.301	$0.341	$0.366	$0.412	$0.339	$0.349
Tar:							
Quantity, gallons	1,364,984	52,800	475,450	76,400	237,050	145,800	377,484
Value	$104,671	$3,696	$37,703	$5,045	$22,197	$8,748	$27,282
Average value per gallon	$0.077	$0.070	$0.079	$0.066	$0.094	$0.060	$0.072
Charcoal:							
Quantity, bushels	2,403,401	1,500,782	216,250	49,460	145,859	225,000	266,050
Value	$210,017	$150,078	$11,807	$2,794	$8,233	$13,500	$23,605
Average value per bushel	$0.087	$0.100	$0.055	$0.056	$0.056	$0.060	$0.089
Oil:							
Quantity, gallons	323,226	2,000	53,738	61,000	117,200	65,000	24,288
Value	$70,080	$300	$12,178	$23,500	$18,980	$9,750	$5,372
Average value per gallon	$0.217	$0.150	$0.227	$0.385	$0.162	$0.150	$0.221
All other:							
Value	$58,535	....	....	$27,085	$15,807	$11,300	$4,343

[1] Includes Delaware, Louisiana, Michigan, Oregon, and Texas.

Alabama reported the highest value of products, and Georgia, Florida, North Carolina, and South Carolina followed in the order named.

Georgia led in the production of turpentine, supplying 38.4 per cent of the total quantity and 39.4 per cent of the total value. This was about 35,000 gallons more than the state produced in 1908, and the average value per gallon was nearly 3 cents higher. Florida was the second state in the production of turpentine, with 176,502 gallons, or 25.9 per cent of the total quantity, valued at $60,262. The average value per gallon of turpentine ranged from $0.301 in Alabama to $0.412 in North Carolina.

Florida led in the production of tar, with 475,450 gallons, or 34.8 per cent of the total quantity, valued at $37,703. North Carolina, furnishing 17.4 per cent of the quantity, ranked second among the states shown separately, though the group of "All other states" produced 27.7 per cent. The average value per gallon ranged from $0.060 in South Carolina to $0.094 in North Carolina.

Alabama, with its iron and steel industry centering near Birmingham, produced 62.4 per cent of the total quantity of charcoal, having 71.5 per cent of the total value. The average value per bushel of the total quantity of charcoal reported for the United States, $0.087, was $0.007 less than in 1908. For the individual states the value per bushel ranged from $0.055 in Florida to $0.10 in Alabama.

North Carolina ranked first in quantity of oil produced, with 36.3 per cent of the total; South Carolina came second, with 20.1 per cent; and Georgia and Florida followed closely, with 18.9 per cent and 16.6 per cent, respectively. The highest average value per gallon, $0.385, was reported from Georgia, and the lowest, $0.15, from Alabama and South Carolina.

Georgia reported 46.3 per cent of the value of the products included under the head "All other;" North Carolina, 27 per cent; and South Carolina, 19.3 per cent.

EXPORTS.

Little information is available concerning the exports of the products of wood distillation, with the exception of the exports of wood alcohol.

Table 7 shows the quantity and value of wood alcohol exported during the fiscal years ending June 30, 1904 to 1910.

TABLE 7.—*Quantity and value of wood alcohol exported: 1904 to 1910.*

[Compiled from Commerce and Navigation of the United States, Bureau of Statistics, Department of Commerce and Labor.]

FISCAL YEAR.	WOOD ALCOHOL EXPORTED.		
	Quantity (gallons).	Value.	
		Amount.	Average per gallon.
1910	1,328,601	$581,820	$0.44
1909	1,100,495	383,788	0.35
1908	1,958,630	819,753	0.42
1907	2,150,311	862,819	0.40
1906	780,222	466,467	0.60
1905	1,097,451	603,385	0.55
1904	1,194,466	585,359	0.49

Both the quantity and value have fluctuated considerably in these seven years. The quantity exported was greater during the fiscal year 1910 than in 1909, but considerably less than in 1907 or 1908, the greatest quantity being exported in 1907. The highest average value per gallon, $0.60, was reached in 1906, the year during which the smallest quantity was exported; and the lowest average value, $0.35, in 1909.

By far the largest part of the exports of wood alcohol for the past six years went to Germany, the United Kingdom, and Belgium, through the ports of New York, Philadelphia, and Boston. Apparently little crude wood alcohol is exported, since the export values given in the table correspond fairly well with the trade values of refined wood alcohol for the years given.

APPENDIX.

TURPENTINE AND ROSIN.

The statistics for the manufacture of turpentine and rosin presented in this report for 1904 and 1909 were collected in connection with the censuses of manufactures for those years, and the statistics for 1907 and 1908 were collected by the Forest Service of the Department of Agriculture. The statistics of exports and imports were compiled from the reports of the Bureau of Statistics of the Department of Commerce and Labor.

The status of the turpentine and rosin industry between 1904 and 1909 is shown by the comparative statistics in the following tabular statement:

Turpentine and rosin—Comparative summary: 1909 and 1904.

	1909	1904	Per cent of increase.
Number of establishments	1,585	1,287	23
Capital	$12,375,000	$6,961,000	78
Cost of materials	$4,911,000	$3,775,000	30
Salaries and wages	$11,019,000	$9,535,000	16
Miscellaneous expenses	$3,103,000	$1,639,000	89
Value of products	$25,295,000	$23,937,000	6
Value added by manufacture (products less cost of materials)	$20,384,000	$20,162,000	1
Employees:			
Number of salaried officials and clerks	2,446	2,147	14
Average number of wage-earners	39,513	33,382	18
Products:			
Spirits of turpentine—			
Gallons	28,989,000	30,687,000	[1]6
Value	$12,654,000	$15,170,000	[1]17
Rosin—			
Barrels (280 pounds)	3,264,000	3,508,000	[1]7
Value	$12,577,000	$8,726,000	44
All other, value	$64,000	$41,000	56

[1] Decrease.

The number of establishments increased from 1,287 in 1904 to 1,585 in 1909, or 23 per cent. The number reported is somewhat less than the actual number, since, in some instances where more than one distillery in the same locality is under one management, consolidated returns were received.

The capital reported shows an increase from $6,961,000 in 1904 to $12,375,000 in 1909, or 78 per cent. The term "capital," as here employed, includes the value of the land used for the site of the distillery, and the value of the plant itself, including the machinery, tools, and other equipment necessary for its operation. The marked increase in the capital invested is attributable in part to the development of extensive and productive virgin timber lands during the last five years. Especially has this been the case in the Gulf states, where conditions justified the construction of large distilleries. Another factor not to be overlooked is the recent introduction of more expensive apparatus, such as the cup system, requiring considerable initial outlay.

The total value of products increased during the five years only 6 per cent; the number of salaried officials and clerks, 14 per cent; and the average number of wage-earners, 18 per cent. The increase in miscellaneous expenses from $1,639,000 in 1904 to $3,103,000 in 1909, or 89 per cent, is explained in part by the fact that the cost of convict labor, uniformly reported as a miscellaneous expense in 1909, was in some cases included in salaries and wages in 1904. This difference in method also helps to explain the relatively small increase in salaries and wages. The cost of the keep of live stock, which is included among miscellaneous expenses, was also more fully reported in 1909 than in 1904.

Although the quantities of turpentine and rosin produced decreased between 1904 and 1909, as did the value of the turpentine, yet the combined value of these products increased from $23,896,000 to $25,231,000, or 6 per cent. The decrease in quantity is probably due to four causes: (1) The depletion of the forests in older localities; (2) weather conditions unfavorable to turpentine production; (3) unsatisfactory prices for the product in 1908, which tended to discourage the manufacture in 1909; (4) two disastrous storms, one in 1906 and another in 1909, which visited a large area of the turpentine section. In Mississippi and Louisiana, especially, a vast amount of timber was blown down and many turpentine establishments were compelled to cease operations. The only encouraging feature for the industry shown by this comparison is the increase of $3,851,000, or 44 per cent, in the value of the rosin produced.

PRODUCTS, BY STATES.

The number of establishments and the amount and value of products of the industry in 1909 and 1904 are shown by states in the following tabular statement:

Number of establishments and quantity and value of turpentine and rosin produced, by states: 1909 and 1904.

STATE AND YEAR.	Establishments.	PRODUCTS.			
		Spirits of turpentine.		Rosin.	
		Quantity (gallons).	Value.	Quantity (280-pound barrels).	Value.
Total:					
1909	1,585	28,989,000	$12,654,000	3,264,000	$12,577,000
1904	1,287	30,687,000	15,170,000	3,508,000	8,726,000
Alabama:					
1909	175	2,840,000	1,254,000	310,000	1,214,000
1904	144	3,108,000	1,502,000	360,000	930,000
Florida:					
1909	593	13,810,000	5,847,000	1,556,000	6,058,000
1904	406	12,873,000	6,426,000	1,446,000	3,447,000
Georgia:					
1909	592	8,057,000	3,557,000	904,000	3,372,000
1904	432	9,542,000	4,795,000	1,105,000	2,902,000
Louisiana:[1]					
1909	26	1,452,000	689,000	167,000	690,000
1904	15	245,000	124,000	30,000	88,000
Mississippi:					
1909	64	1,589,000	732,000	193,000	740,000
1904	124	3,160,000	1,473,000	363,000	892,000
North Carolina:					
1909	79	781,000	370,000	83,000	304,000
1904	87	994,000	480,000	116,000	263,000
South Carolina:					
1909	56	460,000	205,000	51,000	199,000
1904	79	765,000	370,000	88,000	204,000

[1] Includes three establishments in Texas in 1909.

The increase or decrease in the number of establishments for the several states reflects clearly the depletion of the forests in the older turpentine sections and the great inroads that are being made in the virgin timber of the newer localities. In 1909 Texas appears for the first time in census statistics as a turpentine-producing state, the quantity reported from that state amounting to approximately 220,000 gallons, which is included in the statistics of Louisiana.

Of the total production of spirits of turpentine in 1909, 48 per cent was credited to Florida, compared with 3 per cent in the two Carolinas combined. In 1904 the production in Florida was 42 per cent of the total for the country, compared with 6 per cent for the Carolinas.

The statistics for 1907 and 1908 were secured by the Forest Service through correspondence with the operators, supplemented by personal visits of special agents to the principal producing points. Values for turpentine and rosin were not reported by the operators, but were computed by the Forest Service from averages based on current market quotations at Savannah, Ga. The values given in the census statistics for 1909 and 1904 represent the amounts received by the operators for their products after deducting freight charges and all marketing expenses, such as storage, inspection, insurance, and commissions. Since the statistics of values compiled by the two methods are not comparable, only the statistics of production for the four years under discussion are compared in the following table:

Number of establishments and quantity of turpentine and rosin produced, by states: 1909, 1908, 1907, and 1904.

STATE AND YEAR.	Establishments.	PRODUCTS.	
		Spirits of turpentine (gallons).	Rosin (barrels).
United States:			
1909	1,585	28,941,000	3,258,000
1908	1,696	36,589,000	4,288,000
1907	1,629	34,181,000	3,999,000
1904	1,287	30,687,000	3,508,000
Alabama:			
1909	175	2,840,000	310,000
1908	192	3,744,000	447,000
1907	185	3,544,000	419,000
1904	144	3,108,000	360,000
Florida:			
1909	593	13,762,000	1,550,000
1908	633	17,030,000	1,932,000
1907	595	15,573,000	1,774,000
1904	406	12,873,000	1,446,000
Georgia:			
1909	592	8,057,000	904,000
1908	666	10,348,000	1,203,000
1907	643	10,120,000	1,173,000
1904	432	9,542,000	1,105,000
Louisiana:[1]			
1909	26	1,452,000	167,000
1908	33	1,897,000	224,000
1907	26	1,208,000	134,000
1904	15	245,000	30,000
Mississippi:			
1909	64	1,589,000	193,000
1908	94	2,278,000	278,000
1907	93	2,233,000	255,000
1904	124	3,160,000	363,000
North Carolina:			
1909	79	781,000	83,000
1908	41	732,000	132,000
1907	48	916,000	169,000
1904	87	994,000	116,000
South Carolina:			
1909	56	460,000	51,000
1908	37	560,000	72,000
1907	39	587,000	75,000
1904	79	765,000	88,000

[1] Includes three establishments in Texas in 1909; eight in 1908; and four in 1907.

The reports of the Forest Service show that the total production of turpentine in 1907 was 34,181,000 gallons at a valuation, based on Savannah market quotations, of $18,283,000, or approximately 53½ cents per gallon. In 1908 the production amounted to 36,589,000 gallons at a valuation, on the same basis, of $14,112,000, or approximately 38½ cents per gallon.

Rosin production increased from 3,999,000 barrels in 1907 to 4,288,000 in 1908, or 7 per cent. The average price, based on Savannah market quotations, was $4.15 per barrel of 280 pounds in 1908, as compared with $4.33 in 1907.

The large production in 1908, resulting in the low prices previously mentioned, caused the manufacturers to reduce their output materially in 1909, as is shown by a comparison of the figures of production for the two years. The number of crops worked in 1909 is presented in the following statement by age of crop, system by which worked, and by states.

The working unit in turpentine operations is called a crop, which consists of 10,500 boxes or cups. As statistics of this character have not been collected in previous censuses, comparative data are not available.

Number of crops according to age and system used in working, by states: 1909.

STATE AND SYSTEM.	NUMBER OF CROPS WORKED IN 1909.				
	Total.	Virgin.	Yearling.	Third year.	Older trees.
United States:					
Box	17,775	3,058	3,666	4,449	6,602
Cup	2,383	802	661	528	392
Alabama:					
Box	1,636	337	420	423	456
Cup	309	131	84	71	23
Florida:					
Box	8,809	1,374	1,593	2,065	3,777
Cup	1,114	326	313	210	265
Georgia:					
Box	5,721	1,026	1,182	1,482	2,031
Cup	457	120	101	139	97
Louisiana:[1]					
Box	407	92	163	97	55
Cup	319	135	113	67	4
Mississippi:					
Box	871	181	252	288	150
Cup	182	90	49	40	3
North Carolina:					
Box	60	6	15	3	36
Cup	2	....	1	1	....
South Carolina:					
Box	271	42	41	91	97
Cup	....	....	....	....	....

[1] Includes three establishments in Texas.

The above statement shows the relative ages of the crops worked and the relative extent to which the box and cup systems are now used. Until recently the comparatively crude and wasteful box method was universally employed in procuring the gum from the trees, but the above statement shows that at the present time 13 per cent of the trees is treated by the cup system. Among the advantages claimed for this method are a less extensive damage to the vitality and stability of the tree, a greater yield of turpentine and rosin, and much better grades of rosin. The system is extensively employed in Florida, Alabama, Louisiana, and Mississippi, and to some extent in Georgia, but it is nearly unknown in the older districts of the Carolinas.

EXPORTS.

In connection with the statistics of manufacture the following statement of exports will be found of interest:

Quantity and value of exports of turpentine and rosin, by grand divisions to which exported, for the year ending June 30: 1910, 1909, 1908, and 1905.

[Compiled from reports of the Bureau of Statistics, Department of Commerce and Labor.]

GRAND DIVISION.	SPIRITS OF TURPENTINE.		ROSIN.	
	Gallons.	Value.	Barrels (280 pounds).	Value.
Total:				
1910	15,618,581	$8,797,531	2,145,225	$9,758,121
1909	17,528,560	7,033,049	2,171,116	8,009,000
1908	19,565,718	10,166,404	2,714,568	11,403,915
1905	15,927,948	8,922,354	2,311,346	7,073,588
Europe:				
1910	12,958,892	7,216,398	1,659,415	7,410,112
1909	14,860,299	5,827,760	1,684,699	5,942,796
1908	16,376,912	8,300,679	2,203,672	9,013,210
1905	13,537,941	7,522,517	1,835,063	5,539,289
North America:				
1910	1,193,042	674,302	104,156	544,348
1909	1,208,681	513,127	95,536	450,673
1908	1,151,021	623,889	104,221	552,437
1905	1,064,520	587,947	90,820	307,137
South America:				
1910	895,747	559,332	314,174	1,473,183
1909	760,317	356,519	315,053	1,266,217
1908	1,088,644	651,886	295,830	1,337,117
1905	648,866	392,286	224,598	733,367
Asia:				
1910	58,482	36,044	37,718	176,504
1909	113,650	55,230	32,818	139,062
1908	203,061	121,524	29,808	128,721
1905	118,560	73,121	91,063	268,200
Oceania:				
1910	403,154	237,933	24,763	130,080
1909	488,278	231,460	37,459	183,027
1908	595,332	371,712	77,406	353,781
1905	457,231	279,661	67,850	218,403
Africa:				
1910	109,264	73,462	4,999	23,894
1909	97,335	48,947	5,551	27,225
1908	150,748	96,714	3,631	18,649
1905	100,830	66,822	1,952	7,192

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